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ABSTRACT

A computer program was developed to increase GED test candidate's level of test taking skills, knowledge of algebra and geometry, and self-confidence for the GED Mathematics Test. The computer program was developed and written, then implementation was administered by three teachers in a GED study center. Two math scores were used to determine the effectiveness of the computer program: the GED Official Practice Test and the GED Test. After completing prescribed study material and taking the math GED Official Practice Test, a test candidate was asked to work through the software. The program consisted of nine algebra and geometry questions with corresponding brief and uncomplicated tutorial lessons and testing strategies. A Student Survey was used to determine what, if any, algebra and geometry was learned or reinforced by using the computer program. Teachers used a Teacher Observation form to record spoken or inferred feedback from students indicating increased levels of self-confidence. The results indicated higher scores on the GED Mathematics Test than on the pre-test, increased knowledge of algebra and geometry, and a more positive self-concept. Appendices include the results of the surveys and observations, a printout of the program questions, software evaluation and recommendation forms, and a listing of the computer program. (Author/CW)

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COMPUTER-ASSISTED TEST TAKING TIPS AND STRATEGIES FOR THE GED MATHEMATICS TEST

by

CAROLYN L. STRAW

A Practicum Report
submitted to the Faculty of the Center for the
Advancement of Education of Nova University in partial
fulfillment of the requirements for the degree of
Master of Science

The abstract of this report may be placed in the School
Practices Information Files for reference.

May 1989

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AUTHORSHIP STATEMENT

I hereby testify that this paper and the work it reports are entirely my own. Where it has been necessary to draw from the work of others, published or unpublished, I have acknowledged such work in accordance with accepted scholarly and editorial practice. I give this testimony freely, out of respect for the scholarship of other workers in the field and in the hope that my work, presented here, will earn similar respect.

Carolyn L. Straw

ABSTRACT

Computer-Assisted Test Taking Tips and Strategies for the GED Mathematics Test.
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Descriptors: Adult Education/ GED Tests/ Computer-Assisted Instruction/ Test Wiseness/ Test Anxiety/ Mathematics/ Adult Learners/ Computer Based Education/ Testing Skills/

Lower than predicted scores on the GED Mathematics Test was addressed by the development of a computer program. The goal was to increase the GED test candidate's level of test taking skills, knowledge of algebra and geometry, and self-confidence for the GED Mathematics Test.

A computer program was developed and written, then implementation was administered by three teachers in a GED study center. Two math test scores were used to determine the effectiveness of the computer program: the GED Official Practice Test and the GED Test. After completing prescribed study material and taking the math GED Official Practice Test, a test candidate was asked to work through the software. The program consisted of nine algebra and geometry questions with corresponding brief and uncomplicated tutorial lessons and testing strategies. A Student Survey was used to determine what, if any, algebra or geometry was learned or reinforced by using the computer program. Teachers used a Teacher Observation form to record spoken or inferred feedback from students indicating increased levels of self-confidence. The results indicated higher scores on the GED Mathematics Test than on the pretest, increased knowledge of algebra and geometry, and a more positive self-concept. Appendices include the results of the surveys and observations, a printout of the program questions, software evaluation and recommendation forms, and a listing of the computer program.

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Practicum Title Computer-Assisted Test Taking Tips And Strategies For The GED Mathematics Test

Student's Name Carolyn L. Straw

Program Site Seminole Community College Date May 1, 1989

Observer's Name Marilyn Brisson Marilyn Brisson
(please print---------and sign)

Observer's position Director - Adult Ed. Phone #(407)323-1450 EX 656

Observer's comment on impact of the project (handwritten):

The project activities reported in this practicum document took place in the Campus Study Center. Implementation of the computer program resulted in a favorable outcome. The GED students will definitely benefit from this program.

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CHAPTER 1

PURPOSE

This practicum was conducted at a community college in the Central Florida area. The college, in existence for twenty-one years, serves students from a tri-county area in a rapidly growing part of the state. It is located near several important centers of population and is easily accessible by automobile. The college offers a well-rounded curriculum consisting of programs of study for college credit, vocational, and adult education. A wide range of classes are offered in each program.

The Adult Education Program of this community college is designated by the General Educational Development Testing Service (GEDTS) to be this county's official administrator of the General Educational Development (GED) Test. The tests are offered once a month over a three day period. The five subject areas a student must pass in order to be awarded a High School Equivalency Diploma are: writing skills, social studies, science, interpreting literature and the arts, and mathematics.

This practicum writer, after teaching in various GED study centers for the past ten years, is presently working with the GED Home Study Course. This course was designed for the student who, because of health, transportation, or family reasons, is not able to attend one of the eight study centers; however, enrollment is not solely restricted to the above mentioned categories. Students in the Home Study Course may prepare for the GED Tests through the mail, but must come to the county's testing site to take the GED Tests. It is also this practicum writer's responsibility to present Orientation, a one hour session of test taking tips, offered to test candidates four days before the GED Tests. Included in this session are general test taking tips and English and mathematics review, tips, and shortcuts.

The Adult Education Program of the college offers free study centers to adults, 18 years of age or older, who want to prepare themselves to take the GED Tests. The purpose of the GED study center is to provide study material, teacher assistance, and periodic tests so that the student will be equipped to pass the five part GED exam and earn a high school equivalency diploma.

The Campus Center, one of eight study centers throughout the county, was the setting for this practicum. It is the most completely equipped GED study center in the county. It not only has the necessary books for student use, but it also has available to the students audio tapes, video cassette, two Apple computers and four Thompson (IBM clone) computers (Appendix A). Planned additional computers in the classroom will allow even more students to take advantage of computer assisted learning.

Students are in the low to average socio-economic population (Pugsley, 1987) and range in age from 18 to 84; 43.2 percent are male and 56.8 percent are female. There is an average of 69.3 percent white, 19.05 percent black, 7.4 percent Hispanic, and 4.06 percent Asian (1987-88 State Report). In addition to community students, the Campus Center also enrolls students from the Migrant Education Program. This program assists former migrant and seasonal farmworkers in qualifying for jobs through general education and occupational training programs.

Subjects for this practicum included anyone in the Campus Study Center who had completed the prescribed

study material, had taken the mathematics GED Official Practice Test (pretest), and was planning to take the next scheduled GED Test.

Considerable changes were made in the GED Tests in January, 1988. Students are now required to write a 200 word essay in addition to the objective part of the Writing Skills Test. The Mathematics Test contains five percent more algebra and emphasizes higher level problem solving skills, charts and graphs interpretation, and multiple step questions. Some questions include an "insufficient data" answer choice. The Reading Test is now called Interpreting Literature and the Arts and contains passages from popular and classical literature, music and dance, theater, film, and works of art. Overall, the tests place more emphasis on high level thinking skills, problem solving, and global or universal concepts rather than the previous tests' knowledge/recall format.

Many students are embarrassed and intimidated to admit the lack of a high school diploma; just walking through the study center door takes a great deal of courage. Self-esteem is low and a history of failure seems to be a common denominator (Goodman, 1981). In a

survey of recent high school dropouts concerning motivation for leaving school, future educational plans, and family history, prepared by Abram and Cobb (1981), it was found that students' second and third most frequent responses for leaving school were "school was not teaching me what I wanted to know" and "I had poor grades and didn't think I would graduate" (p. 11). When asked to check all the response categories that listed ways the school could have helped them remain in school, the response that tied for first place along with "other" was "a special teacher to help me with my studies" (p. 11).

Upon entering the study center, a student is enrolled and given the Entry Survey (Appendix B) to determine the areas of academic study needed before taking the GED Tests. The Entry Survey is a three part test measuring a student's knowledge of writing skills, reading, and mathematics. Most GED students will score lowest on the math section, next lowest on the writing skills section and highest on the reading section (Student records, 1987). A schedule guide of study (Appendix C) detailing book names, page numbers, and skills to be studied is tailored to each student's need

based on the results of the Entry Survey. A self study format allows each student to learn at a pace that is comfortable and most beneficial. The teacher helps the students, individually, as needed. Because of this self study arrangement, computers are an ideal instrument in assisting the student's progress through the prescribed study material.

Attendance in the center averages 12 to 15 students at any given time. Both daytime and evening classes are offered to accommodate a variety of schedules. Individuals study for an average of two to three hours per day, three to four times a week for a period of one to four months; however, the attrition rate is high--60 to 70 percent.

Often students get impatient, wanting to hurry, take the GED Tests, and get their diplomas. After studying only the basic mathematics, some English, and little or no social studies, science, or literature, they consider themselves ready to take the GED Tests. Algebra and geometry are generally feared, considered time consuming, and therefore avoided. Only the very conscientious will complete the entire study program.

GED graduates are not as academically prepared in

writing skills and mathematics as high school graduates. Results of the 1987 standardization of the revised GED Tests ("GED Examinees vs.", 1987) found that high school seniors are better prepared in mathematics and writing skills than are the GED examinees. Sixty percent of the seniors correctly answered math questions compared to only 50 percent of the GED examinees. About 65 percent of the seniors, but only 60 percent of GED examinees, correctly answered an average multiple-choice item on the Writing Skills Test. However, GED graduates scored slightly higher than high school seniors on the Social Studies and Science Tests and even higher on the Interpreting Literature and the Arts Test.

Sarnacki, as stated by Crocker and Schmitt (1987), concluded "that unfamiliar elements in the test-taking situation (e.g., novel item formats, test instructions, or test item arrangements) may hamper performance" (p. 202). Considering the discrepancy between the results of the math and writing skills tests of GED and high school students, one might wonder if the high school graduate has the edge over the GED graduate in math and English because of "test-wiseness."

In order to prepare the test candidates for the testing process, a one hour test taking tip session (Orientation) is offered to the candidate four days prior to the GED Test. The purpose of Orientation is to familiarize the test candidate with the room where the tests will be given, the procedures and the format of the tests, and to give testing tips in an effort to make the candidate as comfortable with the testing situation as possible. However, not all of the test candidates attend Orientation.

Statistics were compiled on students in the Campus Study Center who took the mathematics GED Official Practice Test (pretest) and the GED Mathematics Test during 1987. Of the 215 students who did not attend Orientation, 28 percent scored higher on the GED math test than they did on the pretest. Of the 101 students who attended Orientation, 35 percent scored higher on the GED math test than they did on the pretest. (1987 pretest and GED Test scores).

Students who come to Orientation benefit from the mathematics testing skills that are presented. More test candidates should be able to take advantage of Orientation; however, many who would benefit from

learning the testing skills cannot or do not attend due to work, schedule conflicts, or apathy.

Familiarizing students with testing skills could result in higher scores on the GED mathematics test; therefore, Orientation should be made more available to GED test candidates so that they could work on the testing skills at their convenience.

Math anxiety is high among many of the GED students. Almost 40 percent of GED graduates dropped out of school in the tenth grade; almost 50 percent dropped out in the eleventh grade ("GED Graduate Study", 1982). Discontinuing school at that stage, especially for the tenth grade dropout, leaves several math requirements unfulfilled. With a definite lack of training in advanced math and their basic math skills weak, the student's anxiety and negative self concept concerning math is evident. The goal of this practicum was to increase the student's level of test taking skills, knowledge of algebra and geometry, and self-confidence. To accomplish this, and as a requirement for a degree in Computer Education, a computer program was written to assist students in learning test taking skills and strategies for the GED Mathematics Test.

The program concentrated mainly on algebra and geometry skills in order to assist many of the GED students who do not complete their full study program.

Objective 1

Over one testing period (four to five weeks), 55 percent of the test candidates in the Campus GED Center who use the computer program will score higher on the GED Mathematics Test than they did on the GED Official Practice Test in mathematics as measured by the GED Official Practice Tests and GED Test scores.

Objective 2

Over one testing period, 50 percent of the test candidates in the Campus GED Center who use the computer program will learn at least one procedure in algebra or geometry that they did not know before, or will reinforce at least one procedure in algebra or geometry that was weak as measured by a student survey.

Objective 3

By being better prepared for the GED Mathematics Test, a test candidate will feel more self-confident about his/her math ability, as measured by oral and written observations by the study center teacher.

CHAPTER 2

RESEARCH

Wine's study, "Test Anxiety and Direction of Attention", as cited by Crocker and Schmitt (1987), related that "persons with little test anxiety attend mostly to task-relevant variables, while highly test anxious persons attend to both self-relevant and task-relevant variables" (p. 204). Familiarizing the highly anxious GED test candidate with the testing procedures and format could lower the time spent on self-relevant variables. Casanova (1986) stated that a student's "familiarity with the test format, the test-taking situation, and with the conventions of the test contribute to good performance" (p. 22). It was emphasized that this is particularly applicable to students who are not experienced in testing.

Berliner (1986) supported this report.

> In nine studies where low-ability students were trained in test-taking skills, those students showed an average gain in test performance that was higher than the gains made by middle- and high-ability students who had also taken the training. So there may actually be some payoff in ensuring that low-ability students (which often means lower social class, ethnic minority, and foreign born) get such training. (p. 22)

Coffin (1987) stated his criticism of the use of standardized tests as an evaluation tool "even though we realize that tests are often a better indication of the socio-economic status of a student's parents than of the student's ability to do college work" (p. 66). Coffin quoted Prell's (1986) article:

> Training represents an attempt to ensure that all students possess a relatively equal level of the test-wiseness trait, so that the presence of test-wiseness cues on a test will not differentially reward high test-wise students while at the same time penalizing individuals low in test-wiseness. It is also thought that the elimination or reduction in differences in test-taking skills will provide truer estimates of the knowledge and abilities being assessed... Thus, as test-wiseness techniques are taught to students, a more accurate reflection or estimation of students' actual knowledge will increase and be improved." (Coffin p. 66)

Informational or response feedback is also an important tool in the learning and testing process. Birenbaum and Tatsuoka (1987) stated that response feedback is important in facilitating learning. "The more informative the feedback is with regard to the correct answer and correct rule, the more likely the post-test results are to be correct" (p. 151-153). Their research supported other researchers' claims. Waldrop, Justen, and Adams's (1986) study determined

that learners with little confidence in their mastery of the material benefitted from the corrective feedback before proceeding to the next example. Further, Cohen (1985) supported the need for immediate feedback for the individual performing at a low mastery level. It was concluded that, after incorrect responses, informational feedback is most effective when corrective action is given. With computers becoming more and more accessible in the classroom, immediate feedback for student answers is available.

Many people, when they hear the words computer-based education (CBE), think of the traditional school setting. However, some of the most important developments in CBE have taken place with adult learners in nontraditional settings (Kulik, Kulik, and Shwalb, 1986).

The first computer-based education was developed to train personnel at computer companies covering such subjects as stenotype and binary arithmetic. In years since, training adults has been a major focus of CBE development. A more recent effort of the Control Data Corporation has been the development of a basic skills curriculum in mathematics, reading, and language

designed to prepare non high school graduates to take the GED Tests (Kulik et al., 1986).

The effects of CBE on adult learners have been studied over the years. One study by Orlansky and String (1979) concluded that there was no practical significance between CBE and conventional classroom students. Orlansky and String did find, however, that there was an instructional time savings of 30 percent in the CBE classroom. Kulik et al. (1986), however, believed that no individual outcome study can show whether CBE is generally effective with adult learners. Kulik et al. stated that "CBE can no more be evaluated by a single outcome study than all textbooks, lectures, or films can be judged on the basis of a single comparison" (p. 236).

Kulik et al. (1986) compiled and studied a pool of 24 studies to determine the effects of CBE on adult learners. The conclusion showed that the typical CBE student performed at the 66th percentile on an achievement exam whereas the typical classroom student performed at the 50th percentile. Twenty-three of the twenty-four studies reported results on the use of CBE: "In nineteen of the twenty-three studies, the CBE class

had the higher examination average; in four studies, the conventionally taught class had the higher average" (p. 242).

Retention at follow-up, student attitudes, and course completion were also studied by Kulik et al. (1986). One of the twenty-four studies selected by Kulik et al., a study by Carson, Graham, Harding, Johnson, Mayo, and Salop, found that after a six weeks interval, retention-test scores of CBE students were 0.45 standard deviations higher than scores of a control group. A study by Demidovich, which Kulik et al. pulled from the pool of twenty-four, reported that CBE students developed a more favorable attitude toward computers than did the conventionally taught students. Another study by Geller and Shugoll, showed that the average dropout rate for CBE students was 55 percent whereas the conventionally taught group had a 68 percent dropout rate.

A final finding of the 24 studies was the reduction of instructional time associated with CBE. In twelve of the thirteen studies reporting instructional time, it was found that computer based instruction took 71 percent of the time required by

conventional teaching methods. This was almost identical to Orlansky and String's report. Since adults have many time constraints, the time spent in the classroom must be spent wisely (Goodman, 1981).

Research has shown computer-based education to be effective. However, less research has been reported on how different styles or techniques of information presentation effect learning (MacLachlan, 1986). MacLachlan described seven learning enhancement techniques, presented underlying research, and illustrated how they could be used in computer lessons. The seven learning enhancement techniques and their computer applications were:

1. ATTENTION AS A PRE-REQUISITE TO LEARNING
   ... attention will be voluntarily given when an individual is motivated.
   Computer application: ... preface a tutorial with instructions indicating the manner in which the student should be watchful. ... attention focusing devices ... can also be used.
2. CURIOSITY AND LEARNING
   ... researchers have reported about twice as much learning when subjects were first asked questions or shown curiosity-provoking ambiguous information.
   Computer application: Pre-questions should be interesting and curiosity provoking, and should focus attention on the most important

elements to be learned ...

3. USE THEMATIC ORGANIZATION
   If a narrative is strongly tied together by a theme ... then memory will be much greater than for less structured material.
   Computer application: ... within tutorials it is wise to use chronologically ordered narratives.
4. MAINTAIN HIGH INFORMATION FLOW
   ... when tutorials present information that students already know ... information flow is low and boredom is apt to set in.
   Computer application: ... provide a means of branching around information which is not needed by certain students.
5. PRESENT MNEMONIC DEVICES
   ... material can be learned more rapidly and recalled more accurately when a mnemonic device, such as a rhyme, is presented.
   Computer application: ... take an image familiar to everyone and attach new information to it.
6. USE CONCRETE RATHER THAN ABSTRACT REPRESENTATIONS
   The ability of people to remember concrete information, ... photographs, is amazing.
   Computer application: ... include ... vivid artwork ... having the computer gradually draw an image ... use parables to verbally illustrate abstract concepts.
7. USE THE ZEIGARNIK EFFECT
   ... enable the reader to amplify the story through drawing inferences and conclusions. In this way, the reader might be induced to ponder a matter and make some deductions himself.
   Computer application: (Gaynor, 1981 as quoted by MacLachlan) End of session feedback produced somewhat better retention scores at the

comprehension level ... (p. 65-69)

MacLachlan (1986) stated that using the seven techniques have lead to increased learning in a variety of situations. More research is needed to determine if using the same techniques in computerized tutorials are as meaningful.

There are others who are not fully convinced that the benefits or the research of CBE is as complete as it could be. Waugh and Currier (1986) urged more research on the effectiveness of CBE "not only to further current knowledge concerning the benefits ... but, more importantly, to establish the potential impact of modes such as simulation and problem solving" (p. 14). In their research article, Waugh and Currier stated Adkinson's concern on how the design of instructional programs influences their effectiveness and Lepper's concern on how differences in the motivational appeal of CBE influence the program's effectiveness. Useful computer programs for the adult GED student are a must. The training manual for ABE/GED teachers, prepared by Goodman (1981), emphasized that adults cannot be a spectator in their learning activities; they must be participants. Nor

are they a captive audience. If they feel their needs are not being met, they will not return.

Halpern (1985), Librarian of the Educational Testing Service Test Collection, summarized the 1985 Invitational Conference sponsored by the Educational Testing Service. The theme of the conference was "The Redesign of Testing for the 21st Century." Nine speakers presented papers at the meeting. Two of the thoughts that seemed to continue to be spoken were the "need to focus on higher-order cognitive skills rather than on knowledge of facts and data" and "the increasingly important role for computers in the future of testing" (p. 12). However, not all speakers agreed. Madaus, of Boston College, expressed concern that, "If the emphasis in testing shifted to assessing higher cognitive skills, ... testing would reward those with analytic skills and overlook those with creative and artistic skills" (Halpern p. 13).

Considering the self-study format of the GED study centers, and considering the positive reports on the use of CBE, the computer was an ideal tool with which to accomplish the objectives. According to Goodman (1981), adults must be participants in their education;

a computer program would allow participation. Both Waldrop et al. (1986) and Cohen (1986) reported the importance of feedback in learning; a computer program would give more immediate feedback than the teacher if the teacher were busy with other students at the time. Kulik's et al. (1986) review of 24 studies found that learning through the use of computers took place in 71 percent of the time of conventional teaching. With numerous constraints on adult's time (Goodman, 1981), it is important to teach them as prudently as possible; a computer program would hasten the learning process.

The studies reported by Berliner (1986) found that training low ability students in test taking skills proved successful. The testing skills presented at Orientation have shown to be worthwhile for those who attend, but there was nothing for the test candidate who could not or did not want to attend Orientation. In order to reach the greatest number of test candidates, some of the skills presented at Orientation were made more available to them on their time schedule. As one of the requirements for a degree in Computer Education, a computer program was developed and written. The program, called Test Taking Tips,

takes the user through a review of algebra, geometry, and testing strategies and tips for the GED Mathematics Test.

Crocker and Schmitt (1987) and Casanova ((1986) agreed that familiarity with the test format is advantageous to the highly anxious or inexperienced test taker. Questions on the Test Taking Tips program are in a similar format to the GED Mathematics Test. The program concentrates on the areas of algebra and geometry that can be easily presented and quickly understood. Learning, or having a better understanding of how to apply just two or three algebra or geometry strategies, for those who have not studied the advanced math or who are weak in those skills, could increase the student's GED Mathematics Test score by four to six points (GED Official Practice Tests scoring conversion tables). For some students, these few points could make the difference in successfully completing or unsuccessfully attempting the GED Tests.

After studying as much of the prescribed study material as time and willingness permitted and taking the mathematics pretest, the GED test candidate worked through the computer program at least once--more if

desired. To fulfill Objective 1, names of program users were recorded. These names were used to compare the student's mathematics pretest score with the individual's GED Mathematics Test score. To fulfill Objective 2, a Student Survey (Appendix D) was given to each test candidate after using the program to determine what, if any, algebra or geometry was learned or reinforced.

To fulfill Objective 3, an Instructor Observation form (Appendix E) was completed by the teachers in the Campus Study Center. This form recorded oral and written feedback of the test candidate's attitude concerning the GED Mathematics Test after working through the computer program.

Using the Nova Software Evaluation form (Appendix F), the accuracy of content and merit of the program was assessed by two peers who are certified or highly skilled in mathematics. To determine areas of difficulty or especially effective areas of the program, the Test Taking Tips Software Evaluation and Recommendation forms (Appendix G) were completed by the study center teachers who administered the software.

CHAPTER 3

METHODOLOGY

The areas of algebra and geometry that would be used were decided upon. It was necessary to select concepts that could be easily explained, quickly understood, and effectively taught using the capabilities of the computer. Nine questions were developed with one question designed for each of the following areas: Distance, Rate, and Time; Exponents; Proportion; Degrees in Angles; Square Roots; Perimeter; Area; Pythagorean Theorem; and Straight/Vertical Angles. A brief tutorial lesson was also designed for each question. If the user missed one of the nine questions, the program would proceed to the corresponding tutorial and an explanation of how to solve similar problems would be presented. The tutorial would then give the user a second chance at answering the original question. Finally, a testing strategy would be presented.

After developing a flow chart of the intended program, the writing of the Test Taking Tips software began. Problems were encountered early in the writing

stage when the first part of the program, which was written on a Tandy 1000 SX (Appendix A) personal computer, was run on one of the study center's Thompson computers. Some graphics commands used for the Tandy were not compatible with the clone's commands. It is possible that the compatibility problems could have been resolved, but the manuals for the clones could not be located. Moreover, the teachers in the study center, it was learned, had experienced difficulty running several graphics intensive commercial software programs on the clones. It had been decided, in order to write a program that would be beneficial to the GED test candidate, that graphics were necessary. The Adult Education Program would be moving into its new facility, with the expectation of new computers for the study center, by the time the software would be ready for implementation. Anticipating that the new computers would be better quality and more compatible, writing of the Test Taking Tips software continued.

Lien's (1986) book was used extensively during the program writing process. Since the study center has a variety of GED math books, it was important to produce a program that was not just another book. Using the

computer to its fullest extent was a goal that made further research into programing imperative. A better understanding of programing graphics was gleaned from Myers (1984). Shelly and Cashman's (1982), and Simpson's (1986) books were also helpful.

By the time the Test Taking Tips program was complete and ready for implementation, the Adult Education Program had moved into its new facility, but no new computers had been ordered nor would be ordered in the near future. The Director of the Adult Education Program generously loaned an IBM PS/30 computer equipped with a 20 mg. hard disk for implementation.

Using the computer lab at this community college, the Test Taking Tips program was transferred from five and a quarter to the three and a half inch disks used by the IBM. Compatibility problems again surfaced. By referencing the IBM manual, it was discovered that changes would have to be made in certain, mainly graphics, commands. The IBM computer did not have a SCREEN 3 command, so five SCREEN 3 commands were changed to SCREEN 1 or 2 and the corresponding screens redesigned. All NOISE commands were changed to SOUND.

Instead of filling a box with an extension of the DRAW command, a separate PAINT command had to be used. The Tandy monitor could display 25 lines, but the IBM monitor displayed only 23 lines; numerous screens were redesigned to shorten the display. Because of the differences in monitors, several circles and angles had to be replotted. Lastly, a multitude of timing loops were lengthened throughout the program because the IBM was a considerably faster machine than the Tandy.

TIME FRAME

Week 1-4:
1. Implementation
   a. Student took math pretest
   b. Student worked through software
   c. Student answered Student Survey
2. Teacher observed and recorded student attitudes

Week 4:
1. Student took GED Tests

Week 5-6:
1. Student Surveys were compiled and calculated
2. Instructor Observations were compiled

Week 6-7:
1. GED and pretest math scores were compiled and calculated

The computer was placed in the study center and

the Test Taking Tips program was installed on the hard disk. Detailed instructions were given to the three teachers in the study center so they would be able to effectively implement the software. Since two of the three teachers who would be showing test candidates how to use the program had little knowledge of computers, a step by step instruction sheet (Appendix H) was written detailing how to access, exit, and interrupt the program. A packet containing Student Surveys, Instructor Observation forms, and the Software Evaluation and Recommendation forms was placed in the study center. Also included in the packet was a printout of the nine questions (Appendix I) that were on the computer program. The teachers could reference this sheet should the test candidate have questions.

After studying as much of the prescribed study material as time and willingness permitted and taking the mathematics pretest, the test candidate was informed about Test Taking Tips and was asked to work through the computer program. Some test candidates could not work through the program after finishing the pretest due to time constraints or previous obligations. They were encouraged to return prior to

the GED testing dates.

Although it was originally requested that only test candidates who had successfully completed the mathematics pretest were to use the computer program, two exceptions were made. These two students chose to take the GED Tests in spite of unacceptable scores on the math pretest and warnings from the teacher that passing the GED math test with such scores was remote. Knowing the students' determination to take the math test despite cautions not to, it was decided to encourage them to work through the software in the hope that the Test Taking Tips program would help these students score high enough on the GED math test to pass.

Ten test candidates worked through the Test Taking Tips program. Names of program users were supplied by the study center teacher. Upon completion of the program, each student was given a survey. The Student Survey was used to determine the student's opinion of what, if any, algebra or geometry was learned or reinforced while working through the Test Taking Tips program.

The teachers were asked to be aware of any spoken

and/or observable behavior that would indicate a test candidate's improved self-confidence about algebra or geometry prior to taking the GED Mathematics Test. Teacher's comments were recorded on the Teacher Observation form.

Using the Nova Software Evaluation Form, the accuracy of content and merit of the program was assessed by two peers who are certified or highly skilled in mathematics. The Software Evaluation and Recommendation form, completed by the three study center teachers, requested input and opinion on areas of difficulty or especially effective areas of the program.

Nine of the students who worked through the Test Taking Tips program took the GED Tests within a month. (Ten test candidates worked through the software; however, one student did not take the GED Tests and was, therefore, eliminated from the statistics.) When the GED Tests scores were returned from Tallahassee, the pretest and GED test math scores of the test candidates who worked through the Test Taking Tips program and those who did not use the program were recorded. To fulfill Objective 1, percentages of

students scoring higher on the GED Mathematics Test than on the pretest of students using the computer program and those not using the program were calculated.

The Student Surveys were compiled. Percentages were tabulated to determine the extent to which algebra or geometry was learned or reinforced as stated in Objective 2.

Results of the Instructor Observations were recorded. Student's attitudes and levels of self-confidence about his/her math ability, as stated in Objective 3, were tabulated.

CHAPTER 4

RESULTS

The goal of this practicum was to increase the GED test candidate's level of test taking skills, knowledge of algebra and geometry, and self-confidence for the GED Mathematics Test through the use of a computer program. The Test Taking Tips program was developed and written stressing algebra and geometry strategies and tips that could be easily taught and quickly comprehended.

Using 1987 testing records, a comparison of student's GED Test and GED Official Practice Test (pretest) scores in mathematics was made. It was found that the percentage of test candidates who bettered their pretest scores on the GED test was higher if the student attended Orientation than those who did not attend Orientation. Having test candidates work through the Test Taking Tips computer program was analogous to their attending the math portion of Orientation. The results of implementation substantiate this.

The goal of Objective 1 was not only reached but

surpassed. A total of 22 students from the Campus Study Center took the GED Mathematics Test. Nine of those who tested worked through the Test Taking Tips computer program. Of the students who used the computer program, 77.8 percent scored higher on the GED Mathematics Test than they did on the pretest. Of the thirteen students who did not use the computer program, 46 percent scored higher on the GED Mathematics Test than on the pretest (Appendix J).

Percentage of students who worked through the Test Taking Tips program and:

scored higher on the pretest than on the GED test	scored higher on the GED test than on the pretest	scored the same
22.2%	77.8%	0

Percentage of students who did not work through the Test Taking Tips program and:

scored higher on the pretest than on the GED test	scored higher on the GED test than on the pretest	scored the same
38.5%	46.2%	15.3%

One of the two students (see chart below) who was encouraged to use the software in spite of unacceptable pretest scores earned the minimum score of 40 to pass the GED Tests. The GED test score of student number two was lower than the pretest score in spite of three

returned visits to the study center to work through the Test Taking Tips program. Multiple uses of the software without improvement and conversations with student number two indicated exceptionally low math skills. Extensive study would be required before the student could expect a passing score on the GED math test.

Student number	Pretest score	GED test score
1	37	40
2	36	33

The Student Surveys were compiled (Appendix K). Of the nine students, two worked through the computer program more than once. Seven of the test candidates thought they had a better chance of passing the GED Mathematics Test than before using the software. This revealed that 77.8 percent of the students felt an improved level of self-confidence about their ability to pass the mathematics test. Only two of the test candidates--one of whom is student number 2 in the chart above--believed chances of passing the math test were about the same in spite of using the computer program. Over half, 66.7 percent, of the test

candidates indicated learning new concepts in algebra and/or geometry after using the program, and 77.8 percent expressed a clearer understanding of some concepts of algebra or geometry that were already known. These percentages denote that the test candidates felt increased competence about passing the GED Mathematics Test.

Rather than being a vehicle solely for the teachers to record student's improved self-confidence or less test anxiety as requested, collected input on the Instructor Observation forms (Appendix L) disclosed an additional, unexpected outcome. Several students, after using Test Taking Tips, realized the need for more study. It is unusual for test candidates to continue studying after taking the pretest; however, four students did so. Although study had been completed and the pretests had been taken prior to using the program, weak areas were disclosed or obscure concepts were made clear enabling the student to return to the study books and to better grasp the material. The chance of passing the GED math test had greatly improved according to one student; another indicated that the time spent using the program was not wasted;

yet another stated that algebra and geometry were easier to understand; and finally, a student indicated more confidence by going through the program twice.

CHAPTER 5

RECOMMENDATIONS

Use of the Test Taking Tips program will continue in the Campus Center as soon as new computers are purchased. In the mean time, the Test Taking Tip program will be stored on three and a half inch disks and given to this college's computer lab. Test candidates will be encouraged to visit the computer lab and work through the program. Information about the program will be sent to the outreach GED study centers throughout the county. Although computers are not available in any of these centers, the teachers will be able to encourage students to visit the computer lab and work through the program.

To avoid compatibility problems and to write a program that is immediately usable, attention should be given to the types of computers that are in use in GED programs. If a high percentage of computers in the GED classroom setting are Apple computers, consideration should be given to writing the software for the Apple. Had the software been written for the Apple, compatibility differences of the MS-DOS or IBM PS/2

(Appendix A) computers would have been avoided, and the software would be in use, without delay, on the Campus Study Center's Apple computers.

A menu needs to be added to the program so that test candidates who are weak in specific areas could access only the problems in a chosen area. The menu would, likewise, allow a student to repeat selected problems as needed.

An autoexec.bat file would make accessing the program easier, especially for students or teachers who are not familiar with computers. It would also be desirable to allow the user to exit the program at any time.

A problem and tutorial lesson on algebra word problems is in the process of being written. Because of the capabilities of the computer, it is an ideal tool for presenting the difficult to grasp concepts of algebra word problems.

Software is available to prepare a student for the subject matter of the GED tests. There is, however, no program especially designed for use after studying is complete that gives strategies, tips, and review using the GED Test format. When the above mentioned

corrections and additions are made to the Test Taking Tips software, the program will be made available to other GED programs.

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APPENDIX A

TRADEMARK IDENTIFICATION

Trademark Products And Corresponding Companies

Apple™	Apple Computer, Inc.
IBM®	International Business Machines, Inc.
IBM PS/2™	International Business Machines, Inc.
MS-DOS®	Microsoft Corporation
Tandy®	Tandy Corporation
Thompson®	Thompson Corporation

APPENDIX B

ENTRY SURVEY

WRITING SKILLS (ENGLISH)

Grammar

Choose the correct answer and place its letter in the blank on the answer sheet provided.

1. A complete sentence contains a subject, (predicate (a), clause (b)) and a complete thought.

2. George and Billy (was (a), were (b)) here just a moment ago.

3. Joe, as well as his friend, (is (a), are (b)) really proud of that shiny red convertible

4. One of the boys (has (a), have (b)) left the room.

5. As the sun (set (a), sat (b)), the sky turned an array of pink and red shades.

6. Overjoyed at being chosen the star, Sue Ellen (sang (a), sung (b)) her very best in the class play.

7. Dora has (drank (a), drunk (b)) all the lemonade.

8. Last week, Joe and (he (a), him (b)) towed their old car to a garage for repairs.

9. (It's (a), Its (b)) motor would barely start and the body was coated with rust.

10. She raised her head (quick (a), quickly (b)).

11. Alice is the (faster (a), fastest (b)) swimmer in her class.

12. I don't buy (anything (a), nothing (b)) on sale.

Punctuation

Place the letter of the punctuation (sentences 13 and 14) or capitalization (sentences 15 - 17) error from each sentence in the blank. If there is no error, choose letter e.

13. Do you remember_ (a) Lewis, what Leonard's (b) last name is, (c) or_ (d) have you forgotten? no error (e)

14. "I haven't seen the Mozart movie yet," said Jennifer, "but I have enjoyed his music for years." no error
(a) (b) (c) (d) (e)

Capitalization

15. Joyce Jones attended high school in Coventry, England, and excelled in woodworking, biology, and russian. no error.
(a) (b) (c) (d) (e)

16. The northeast, especially Maine, is noted for winter sports and seafood. no error
(a) (b) (c) (d) (e)

17. When our group toured Boston, we visited many historical sites, including the harbor where the famous Boston Tea party took place. no error
(a) (b) (c) (d) (e)

Spelling

Place the letter of the incorrectly spelled word from each group in the blank provided. If no word is misspelled, choose letter e.

18.
a. courteous
b. paralel
c. maintenance
d. embarrass
e. no error

19.
a. eligible
b. affect
c. priviledge
d. forty
e. no error

20.
a. grammar
b. receive
c. criticize
d. consciense
e. no error

READING

Read the passages below. On your answer sheet, write the letter that indicates the best choice for each question.

The heart is a muscular pump about the size of your fist. It is located near the left of the breast bone. Your heart has four rooms called chambers. It is from these chambers that blood is pumped throughout the body. This pumping of blood to and from the chambers of the heart feeds the body. To keep the heart pumping, you do nothing; it works night and day without stopping.

Heart diseases are the major cause of death in the United States. The most common disease causing damage to the heart is called "arteriosclerosis." This means that the blood vessels to the heart become hard and narrow. Blood does not get to the body as needed, especially to the heart. This results in heart disease or a heart attack. Heart diseases have been called "the wounds that show no scars." A man, woman, or child who has something wrong with his heart may look fine, have good color, and enough energy to work, but may be very ill.

1. According to the passage, the heart
   a. is a muscular pump located near the right side of the breast bone.
   b. has four valves called chambers.
   c. pumps blood through the body.
   d. is made of arteriosclerosis.

2. The statement "the wounds that show no scars" implies that the person
   a. has been hurt with a very thin sharp object.
   b. may look healthy, but be very ill.
   c. healed quickly after surgery.
   d. is in good health because no damage can be seen.

3. The best title for this passage would be:
   a. The Magnificent Human Body
   b. Your Heart and Heart Disease
   c. Arteriosclerosis
   d. How the Heart Feeds Itself

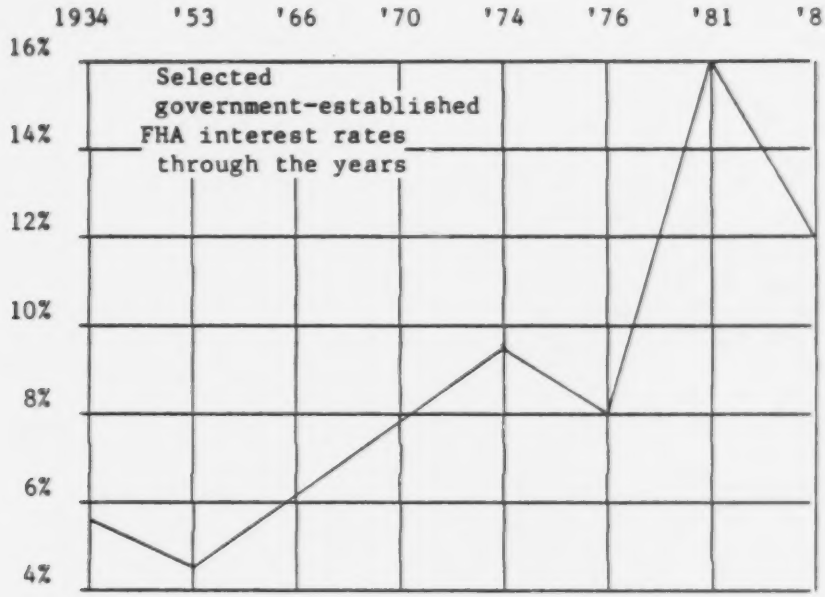
4. The author's tone is
   a. sarcastic.
   b. ironic.
   c. hostile.
   d. factual.

We are facing some serious problems about local law enforcement Crime is increasing at staggering rates in most communities, regardless of size. We cannot afford a police officer on every corner. Even if we could, that would not be enough without some effort on the part of each citizen. This does not mean that we should walk around our property wearing a gun. That would create more problems than it would solve. But you and your neighbors can agree to watch each other's houses, then call the police if you see any strange happenings.

5. The main idea expressed in this passage is:
   a. Law enforcement is the responsibility of the police only.
   b. Citizen cooperation is vital to decreasing the crime rate.
   c. Citizen's rights to carry guns should be strengthened.
   d. Large cities have more crime than small towns.

6. The author implies that:
   a. The larger the local law enforcement agency, the less crime in a city.
   b. Everyone should carry a gun.
   c. Strange persons in the neighborhood always mean trouble.
   d. Neighborhood Watch Associations are an effective crime deterrent.

7. From this passage you could conclude that the author would support
   a. keeping neighbor's phone numbers handy for emergencies.
   b. large increases in police personnel.
   c. limiting citizen involvement in crime control.
   d. easing gun control laws.



USE THE GRAPH ABOVE TO ANSWER QUESTIONS 8 - 10.

8. According to the graph, the FHA interest rate in 1981 was:
   a. above 14%
   b. steady at 12%
   c. less than 8%
   d. over 8% but not quite 10%

9. The largest percentage in change of interest rates occurred during:
   a. 1934 - 1953
   b. 1976 - 1981
   c. 1953 - 1974
   d. 1981 - 1983

10. The information in the graph suggests that the best year for you to have bought a house was:
   a. 1981
   b. 1974
   c. 1953
   d. 1934

The new Landlord-Tenant Law gives tenants rights which they never had before. For the law to apply, the landlord and the tenant must first reach an agreement, called a lease. A lease should state the amount of rent, frequency of payment, and duration of occupancy. The lease may be written or simply understood. Even if the agreement is unwritten, that is a "gentleman's agreement", the tenant and landlord are still protected by the law.

The law also deals with security deposits. A security deposit is money paid the landlord by the tenant at the beginning of the lease. This money protects the landlord in case the tenant causes any damage to the building he is renting. If the tenant does not damage the landlord's property, other than give it normal wear and tear, he should be refunded the deposit when he leaves.

11. According to the passage, it is reasonable to conclude that a landlord would keep some or all of the security deposit when a tenant leaves if
    a. the lawn needs cutting.
    b. there is a hole burned in the family room carpet.
    c. there are fingerprints around the light switches.
    d. the dining room light bulb is burned out.

12. A "gentleman's agreement"
    a. must be written.
    b. would not hold up in court.
    c. is a spoken agreement between two or more people.
    d. is stated in the written lease.

13. According to the passage, the Landlord-Tenant Law
    a. has been in existence for many years.
    b. gives tenants new rights.
    c. requires the landlord to make a security deposit.
    d. requires the tenant to sign a lease.

14. All of the following are true about a lease EXCEPT
    a. A lease provides legal protection.
    b. A lease must be written.
    c. The length of occupancy should be included.
    d. The amount and frequency of payment should be stated.

An important factor in keeping physically fit is exercise. What do you think of when you hear the word "exercise"? A gym teacher blowing his whistle and shouting "one, two, bend and stretch"? An army drill sergeant barking commands at you? A game of organized sports or perhaps work around the house like cutting the grass, cleaning, washing windows, or working in the garden? Well, exercise is all of these things and more.

Besides working around the house and other exercise from which we benefit throughout the day, there is also the possibility of starting an exercise program. All exercise does not have to lead to the bulging muscles of a Charles Atlas physique. There are many exercises which work to keep your body toned and flexible. Most are so simple they can be performed at home with no expense other than an investment of time.

15. The best title for this passage would be:
    a. Good Health
    b. Organized Sports
    c. Physical Fitness
    d. Bulging Biceps

16. According to the passage,
    a. doing housework is not physically beneficial.
    b. all exercise will make you muscular.
    c. there are many forms of beneficial exercise.
    d. organized sports are the best form of exercise.

17. The tone of this passage is:
    a. dramatic
    b. demanding
    c. informative
    d. humorous

Before the Industrial Revolution, each craftsman was forced to keep, in his small shop, many different kinds of equipment. He could, however, use only one piece of equipment at a time. Now, in a modern factory, each man is assigned to a machine; therefore, idle equipment is "a thing of the past."

New processes also brought about more efficient production. Early production of iron was limited by the scarcity of charcoal which was needed in the smelting process. The new technique of using coke instead of charcoal in the smelting process led to wide scale production of iron products. With the invention of the "spinning jenny" and the "mule", very fine cotton thread was quickly made by machinery. No longer were domestic workers used to spin cotton into thread.

18. Which of the following sentences best expresses the main idea?
    a. Large scale production of iron was increased by new smelting processes.
    b. Early craftsmen used many types of equipment.
    c. The scarcity of charcoal limited iron production.
    d. The Industrial Revolution created more efficient methods of producing goods.

19. As suggested in the first paragraph, since each man, in a modern factory, is assigned to a machine, equipment is now
    a. constantly used.
    b. elaborately designed.
    c. professionally maintained.
    d. skillfully operated.

20. In this context, the words "spinning jenny" and "mule" refer to:
    a. domestic workers
    b. machines
    c. cotton yarns
    d. laborers

MATHEMATICS

Work each problem in the space provided on the answer sheet, then choose letters a, b, c, or d. Write the letter of your choice on the answer sheet. If none of the answers are correct, mark answer e.

1. Which number is in the thousands place in the number 563,478 ?

    a. 5 b. 6 c. 3 d. 4 e. none of these

2. Round to the nearest hundreds: 43,892

    a. 44,000 b. 44,892 c. 43,000 d. 43,900 e. none of these

3. $\begin{array}{r} 508 \\ -\ 59 \\ \hline \end{array}$

    a. 451 b. 551 c. 459 d. 449 e. none of these

4. $\begin{array}{r} 468 \\ \times\ 47 \\ \hline \end{array}$

    a. 3276 b. 21996 c. 19246 d. 5148 e. none of these

5. $28\overline{)3696}$

    a. 146 r. 12 b. 167 r. 20 c. 132 d. 139 r. 4 e. none of these

6. JoAnn earned grades of 95, 93, 100, and 92. What was her average?

a. 95 b. 380 c. 96 d. 280 e. none of these

7. $3\frac{3}{5} + 18\frac{1}{5}$

a. $21\frac{4}{10}$ b. $21\frac{2}{5}$ c. $22\frac{2}{5}$ d. $21\frac{4}{5}$ e. none of these

8. $12\frac{7}{8} - 9\frac{3}{4}$

a. $3\frac{4}{8}$ b. $3\frac{1}{3}$ c. $3\frac{5}{6}$ d. $3\frac{1}{8}$ e. none of these

9. $2\frac{3}{4} \times \frac{8}{9}$

a. $2\frac{4}{9}$ b. $1\frac{1}{3}$ c. $2\frac{2}{3}$ d. $\frac{2}{3}$ e. none of these

10. $\frac{3}{8} \div 9$

a. $\frac{3}{24}$ b. $3\frac{3}{8}$ c. $\frac{1}{24}$ d. $1\frac{3}{8}$ e. none of these

11. Add: 3.2, 8, .006, 56.29

a. 67.55 b. 67.496 c. 57.496 d. 60.35 e. none of these

12. Multiply 5.89 times 4.3

a. 25.327 b. 17.67 c. 253.27 d. 23.56 e. none of these

13. $.08\overline{)\,48}$

a. .6 b. 600 c. .06 d. .60 e. none of these

14. Change .3 to a fraction:

a. $\frac{3}{5}$ b. $\frac{3}{1}$ c. $\frac{3}{100}$ d. $\frac{3}{10}$ e. none of these

15. 8% of 42 is what ?

a. 336 b. 6.0 c. 600 d. 3.36 e. none of these

16. 21 is what % of 60 ?

a. 1260% b. 35%
c. .35% d. 1.26%
e. none of these

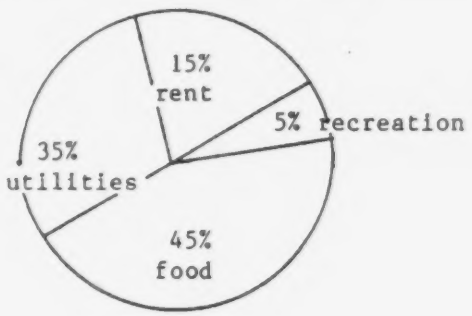
17. Change 12.5% to a decimal:

a. 1250. b. 1.25 c. .125 d. 12.5 e. none of these

18.
$$\begin{array}{r} 1 \text{ yd. } 2 \text{ ft. } 7 \text{ in.} \\ \times \quad 2 \\ \hline \end{array}$$

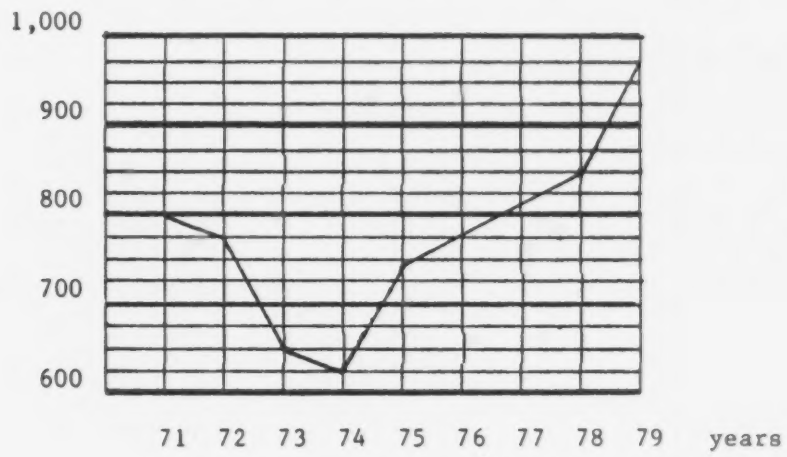
a. 3yd. 2ft. 2in. b. 2yd. 4ft. 14in.
c. 3yd. 1ft. 14in. d. 2yd. 5ft. 2in.
e. none of these

19. From the graph below, determine all but what percent of the family's income that is spent on food and utilities.



a. 20% b. 35% c. 80% d. 45% e. none of these

20. During which of the periods (in the graph below) does the average number of employees **decrease the most?**



a. 1971-72
b. 1972-73
c. 1973-74
d. 1974-75
e. none of these

ENTRY SURVEY ANSWER SHEET

Date _____ Name _____

WRITING SKILLS

WRITTEN ESSAY Write a 50 to 100 word essay about yourself or your family. (This essay is a required part of the Writing Skills Survey.)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____

No. Right _____

SCORE: _____

Essay
SCORE: _____

READING	MATHEMATICS
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
4. _____	4. _____
5. _____	5. _____
6. _____	6. _____
7. _____	7. _____
8. _____	8. _____
9. _____	9. _____
10. _____	10. _____
11. _____	11. _____
12. _____	12. _____
13. _____	13. _____
14. _____	14. _____
15. _____	15. _____
16. _____	16. _____
17. _____	17. _____
18. _____	18. _____
19. _____	19. _____
20. _____	20. _____

_____ No. Right _____

_____ SCORE: _____

Show your math work here, then record your answers in the space provided to the left.

APPENDIX C

NAME _____

SCHEDULE GUIDE

Entry Survey

Date Taken _____

Scores:

- Writing Skills _____
  - Essay (1-6) _____
- Reading _____
- Mathematics _____

Midway or other tests

Name of test:	Score:	Date:
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Pre GED Tests

	Scores	Date Taken
Writing Skills	_____	_____
Essay	_____	_____
Social Studies	_____	_____
Science	_____	_____
Literature	_____	_____
Mathematics	_____	_____

GED Tests

	Scores	Date Taken
Writing Skills	_____	_____
Essay	_____	_____
Social Studies	_____	_____
Science	_____	_____
Literature	_____	_____
Mathematics	_____	_____

Additional testing or comments:

_____

_____

_____

_____

_____

Entry Survey question type and corresponding question numbers

Writing Skills

1	Sentence parts
2 3 4	Sub/Verb Agree
5 6 7	Verb Tense
8 9	Pronouns
10 11	Adj/Adv
12	Double Neg
13 14	Punctuation
15 16 17	Capitalization
18 19	Spelling

Mathematics

1	Place Value
2	Rounding
3	+ Whole #
4	- "
5	x "
6	- "
7	+ Fractions
8	- "
9	x "
10	- "
11	+ Decimals
12	x "
13	- "
14	Dec to Frac
15 16 17	Percents
18	Measurements
19 20	Graphs

WRITING SKILLS - PRE GED

Name _____ 57

CONTEMPORARY Book

LANGUAGE SKILLS

Parts of Speech	____	12-22
What Is A Sentence?	____	26-42
Nouns and Pronouns	____	45-67
Verbs: Form and Tense	____	70-94
Subject-Verb Agreement	____	98-117
Adjectives and Adverbs	____	120-140
Combining Sentences	____	143-164
Sent. Structure/Paragraphs	____	167-178
LANGUAGE SKILLS REVIEW	____	180-189

WRITING SKILLS

*Your Thoughts About the World	____	10-12
+An Event in Your Life	____	23
*Clustering	____	24-26
+Making a Word Picture	____	43
*What's on Your Mind?	____	44
+A One-Sided Argument	____	68
*An Important Person	____	69
+Telling a Story	____	94-95
*Brainstorming	____	96-97
+An Event in Your Life	____	118
*Stating Your Opinion	____	119-120
+Writing Letters	____	141
*Using Your Imagination	____	142-143
+Writing a Paragraph	____	165
*Concerns or Memories?	____	166-167
+Three Paragraphs	____	179
POSTTEST	____	191-199

*Journal Writing +Your Turn to Write

CAMBRIDGE Book

SUBJECTS & VERBS	____	Pages 8-118
How Much Do You Know	____	1-7
Is It a Sentence?	____	8-21
What Is the Simple Subject	____	22-42
Does the Verb Match the Sub?	____	43-54
Singular or Plural Noun?	____	55-65
Singular or Plural Pronoun?	____	66-76
Verb Match Compound Subject?	____	77-86
How Are Verbs Used?	____	87-106
MEASURING YOUR PROGRESS	____	107-118
PRONOUN/ADJECT/ADVERB	____	Pages 119-201
How Much Do You Know	____	119-126
Is the Pronoun Right?	____	127-138
Possession	____	139-153
Is the Adjective Right?	____	154-164
Is the Adverb Right?	____	165-178
Words That Compare	____	179-194
MEASURING YOUR PROGRESS	____	195-201
SENTENCES/PARAGRAPHS/ & WRITING	____	Pages 202-264
How Much Do You Know	____	202-206
How Are Compounds Used?	____	207-219
Compound Sentences	____	220-230
Phrases & Fragments	____	231-242
Good Paragraphs	____	243-256
MEASURING YOUR PROGRESS	____	257-264
POSTTEST	____	265-274

STECK-VAUGHN Book

CAPITALIZATION	____	Pages 9-26
PUNCTUATION	____	Pages 27-44
WRITING CLEAR SENTENCES	____	Pages 45-64
NOUNS/PRONOUNS/ADJECTIVES	____	Pages 65-84
Subjects & Objects	____	65-69
Forming Plurals	____	70-72
Changing Nouns to Pronouns	____	73-75
Adjectives Clarify Writing	____	76-79
Pronouns Instead of Nouns/ Adjectives to Clarify	____	80-81
VERBS AND ADVERBS	____	Pages 85-106
Verb Forms	____	86-90
Using Helping Verbs	____	91-93
Matching Verbs to Subject	____	94-97
Adding Adverbs	____	98-101
The Right Verb Form/ Action Words	____	102-103
CORRECTING YOUR SPELLING	____	Pages 107-125
Words that Sound Alike	____	108-111
Rules You Can Use	____	112-114
Using the Dictionary	____	115-121
Spotting Spelling Problems/ Using the Dictionary	____	122-123

WRITING PRACTICE

Thinking and Writing	____	21
Thinking and Writing	____	39
Thinking and Writing	____	59
Thinking and Writing	____	79
Thinking and Writing	____	101
Thinking and Writing	____	121

Name _____

Entry Score: _____
Date: _____

CONTEMPORARY Book

PREPARING FOR WRITING ____ Pages 18-23

MULTIPLE-CHOICE SECTION ____ Pages 24-25

PLANNING YOUR WRITING ____ Pages 26-62
- SENTENCE BASICS ____ 30-62
  - Sentences ____ 30-36
  - Understanding Verbs ____ 36-40
  - Compounding Sentences ____ 41-43
  - Nouns & Pronouns ____ 44-62

WRITING PARAGRAPHS ____ Pages 63-112
- USING VERBS ____ 71-112
  - Verb Tense ____ 71-83
  - Irregular Verb Forms ____ 83-91
  - Subject-Verb Agreement ____ 92-108
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PATTERNS OF ORGANIZATION ____ Pages 113-167
- COMBINING IDEAS IN SENTENCES ____ 127-167
  - Linking Clauses ____ 128-148
  - Rewriting Sentences ____ 148-152
  - Sequence of Tenses ____ 152-162
  - Cumulative Review ____ 163-167

WRITING AN ESSAY ____ Pages 168-181

KEEP STORY STRAIGHT ____ Pages 182-217
- Modifers ____ 182-191
- Parallel Structure ____ 191-195
- Pronoun References ____ 195-212
- Cumulative Review ____ 112-217

POLISH YOUR WRITING ____ Pages 218-236
- Using Reason/Example/Detail ____ 219-225
- Sent. & Paragraph Links ____ 226-230
- Revising for Smooth Writing ____ 231-234
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CAPITALIZATION & SPELLING ____ Pages 237-271
- Capitalization ____ 237-241
- Spelling ____ 241-262
- Cumulative Review ____ 263-267
- Master Spelling List ____ 268-271

TEST TAKING STRATIGIES ____ Pages 272-286
- Multiple-Choice Test ____ 272-279
- Essay ____ 279-286

POST TEST ____ Pages 287-306

CAMBRIDGE Book

GRAMMAR ____ Pages 23-143
- Usage ____ 25-54
- Sentence Structure ____ 55-74
- Mechanics ____ 75-109
- Editing Paragraphs ____ 110-135
- Unit I Test ____ 136-143

ESSAY WRITING ____ Pages 145-184
- Daily Writing ____ 147-150
- The Writing Process ____ 151-170
- Reviewing Writing Process ____ 171-181
- Unit II Test ____ 182-183

PRACTICE ITEMS ____ Pages 186-204
- Part I ____ 189-201
- Part II ____ 202-204

PRACTICE TEST ____ Pages 205-222
- Part I ____ 207-219
- Part II ____ 220-222

SIMULATED TEST ____ Pages 224-240
- Part I ____ 225-237
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MECHANICS ____ Pages 14-75
- Capitalization ____ 16-22
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- Spelling Errors ____ 65-71
- MECHANICS REVIEW ____ 72-75

USAGE ____ Pages 76-157
- Verbs-Agree/Irreg/Tense ____ 78-112
- Nouns-Plural & Possessive ____ 113-119
- Pronouns ____ 120-154
- USAGE REVIEW ____ 155-157

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- Fragments/Run-On Sentences ____ 160-166
- Combine Sentences ____ 167-173
- Parallel Structure ____ 174-180
- Subordination in Sentences ____ 181-187
- Common Errors in Sentences ____ 188-194
- SENTENCE STRUCTURE REVIEW ____ 195-196

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Name _____

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What Are Whole Numbers?	____	7-17
Addition Skills	____	18-43
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Multiplication Skills	____	72-99
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Perimeter/Area/Volume	____	154-159
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Squares/Cubes/Sq Roots	____	162-164
POSTTEST	____	165-167

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OVERVIEW Dec/Frac/Percent	____	26-28
DECIMALS:	____	Pages 30-65
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Working With Fractions	____	66-72
Adding & Subtracting	____	73-91
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MEASURING YOUR PROGRESS	____	129-132
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Name _____

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Date: _____

CONTEMPORARY Book

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ALGEBRA BASICS	____	Pages 202-223
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Fractions	____	23-64
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Graphs	____	138-144
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ARITHMETIC REVIEW	____	159-165
ALGEBRA	____	Pages 166-257
Integers (Signed No.)	____	166-181
Equations	____	182-209
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Slope & Lines	____	224-230
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Triangles & Quadrilat.	____	267-273
Logical Thinking	____	274-280
Congruent Triangles	____	281-287
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Sq. Root/Pythag. Theo.	____	295-301
Circles/Spheres	____	302-308
GEOMETRY REVIEW	____	309-315
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Schedule Guide

Name _____

CONTEMPORARY Book

SOCIAL STUDIES

PRETEST	____	1-15
Understanding	____	17-45
Chart/Graph/Map	____	46-85
Patterns	____	86-112
Analyzing	____	113-141
Evaluating	____	142-169
Applying Info	____	170-183
POSTTEST	____	184-197

SCIENCE

PRETEST	____	1-13
Sci Method	____	14-27
Understand	____	28-36
Plant/Anim	____	37-56
Illustration	____	57-72
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Analyzing	____	96-106
Physics	____	107-128
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Chemistry	____	137-159
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Earth Scien	____	166-193
POSTTEST	____	195-213

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PRETEST	____	1-13
Understanding	____	15-57
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Find Meanings	____	95-127
Reading Lit	____	128-172
Think Yourself	____	173-210
POSTTEST	____	211-223

CAMBRIDGE Book

How Much Can You Do	____	3-18
Taking First Step	____	19-63
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Keeping Track	____	33-44
Using Clues	____	45-63
Reading For Info	____	64-102
Main Idea	____	65-80
Finding Details	____	81-102
Interpreting Read	____	103-153
Unstated Main Idea	____	104-115
Making Inferences	____	116-132
Organization	____	133-145
Draw Conclusions	____	146-153
Analyzing	____	154-174
Facts & Opinion	____	155-164
Bias & Tone	____	165-174
Understand Illustra	____	175-203
Tables/Graphs/Etc.	____	176-203
How Much Can You Do	____	204-219

SOCIAL STUDIES

Main Idea	____	76-77
Find Details	____	98
Unstated Main	____	113-114
Inferences	____	127
Organization	____	142-143

SCIENCE

Main Idea	____	75-76
Find Details	____	97
Inferences	____	126
Organization	____	141-142

LITERATURE

Main Idea	____	77-78
Find Details	____	99
Inferences	____	128

STECK-VAUGHN Book

SOCIAL STUDIES

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Political Sci	____	59-82
Economics	____	83-100
Behavioral Sci	____	101-119
CHECK TEST	____	120-133

SCIENCE

WHAT YOU KNOW	____	1-10
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Earth Science	____	43-76
Chemistry	____	77-98
Physics	____	99-120
CHECK TEST	____	121-133

LITERATURE

WHAT YOU KNOW	____	1-10
Finding Info	____	11-30
Word Meaning	____	31-46
Main Idea	____	47-72
Paragraphs	____	73-94
Interpreting	____	95-120
CHECK TEST	____	121-133

Schedule Guide

Name _____

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CONTEMPORARY Book - - -

APPENDIX D

STUDENT SURVEY

Thank you for answering the following questions about the computer program "Test Taking Tips."

1. Is this the first time you have worked through "Test Taking Tips"?

_____yes _____no

2. In using the program, did you learn any algebra or geometry you didn't know before?

_____yes _____no

If yes, what? _____

3. Was there any algebra or geometry you knew before, but using the program helped you to understand it better?

_____yes _____no

If yes, what? _____

4. Do you think it would be worthwhile to go through the program again, or do you think going through it once is enough?

_____I would like to go through the program again.

_____I got all the information I needed the first time.

5. Do you think your chances of passing the GED Mathematics Test are better, the same, or worse since you used "Test Taking Tips"?

_____Yes, better. _____About the same.

_____No, worse.

APPENDIX E

INSTRUCTOR OBSERVATIONS

Please record any comments, observation, or actions that would indicate that a student has obtained an improved self-concept about his/her math ability, less test or math anxiety, better ability to pass the GED Mathematics Test, or any general improvement in math skills because of what was learned by working through the Test Taking Tips computer program.

APPENDIX F

SOFTWARE EVALUATION

1. Title, Publisher, Copyright Date:

2. Type

Tutorial	XX	Drill and Practice	
Game		Simulation	XX
Combination		Test/Diagnosis	
Administrative		Other	

3. User

Pre School		Elementary	
Jr. High		Sr. High	
College		Adult	XX

Comments:

---

4. Cost

1. Initial cost of the program

2. Replacement policy (yes) (no)

   Cost for replacement

3. Hardware requirements: 32K 48K 64K XX

   IBM PS/30 Single drive XX Double drive

   Printer (yes) (no) XX

   Color (yes optional (no)

   Special Hardware Required: (yes) (no) XX

COMMENTS:

5. Does the program reach the target population for which it was designed? Yes ✓ No _____ N/A _____

6. Are the instructions well organized, useful and easy to understand? Yes ✓ No _____ N/A _____

7. Does the material require extensive preparation or training on the user's part? Yes _____ No ✓ N/A _____

8. Does the program provide for user self-pacing? Yes ✓ No ✓ N/A _____

9. Is the content presented clearly? Yes ✓ No _____ N/A _____

10. Is the program organized and presented in a sequential manner and in appropriate developmental steps? Yes ✓ No _____ N/A _____

11. Can the user exit the program at any time? Yes _____ No ✓ N/A _____

12. Does the user need typing skills to use the program? Yes _____ No ✓ N/A _____

13. Can a student use the program without supervision? Yes ✓ No _____ N/A _____

14. Is a printout of student performance available, if desired? Yes _____ No ✓ N/A _____

15. Is the screen presentation pleasing to the eye? Yes ✓ No _____ N/A _____

16. Does the speed of presentation match individual learning styles? Yes ✓ No _____ N/A _____

17. Is the size of the print clear and well spaced? Yes ✓ No _____ N/A _____

18. Are the use of graphics, sound, and color appropriate? Yes ✓ No _____ N/A _____

Documentation

1. Does the material require the purchase of accompanying printed material? Yes _____ No ✓ N/A _____

2. Does the material provide direct instruction? Yes ✓ No _____ N/A _____

3. Is the material self-sufficient? Yes ✓ No _____ N/A _____

4. Is the size of the print clear and well placed? Yes ✓ No _____ N/A _____

5. Are the materials packaged so they can be easily and safely stored? Yes _____ No _____ N/A ✓

6. Is there a glossary of terminology provided? Yes _____ No _____ N/A ✓

7. Does the documentation contain a section on trouble-shooting? Yes _____ No _____ N/A ✓

8. Can you use the program without constantly referring back to documentation? Yes ✓ No _____ N/A _____

9. Is the documentation organized and presented in a sequential manner and in appropriate developmental steps? Yes _____ No _____ N/A ✓

10. Does the publisher provide for a preview of the courseware? Yes _____ No _____ N/A ✓

Content

1. Is the courseware simple to use ? ✓

2. Is the courseware content accurate? ✓

3. Are the courseware commands consistent? ✓

4. Is the material appropriate for the age group? ✓

5. Does the material provide a variety of built-in reinforcements? Yes ✓ No _____ N/A _____

6. Does the content require previous learning or experiential background? Yes ✓ No _____ N/A _____

7. Is the material presented on a meaningful and appropriate language level? Yes ✓ No _____ N/A _____

8. Is the coursework free of sex bias and stereotyping? Yes ✓ No _____ N/A _____

9. Does the program provide the user the opportunity for review? Yes ✓ No _____ N/A _____

10. Can the user modify the instructional material? Yes _____ No ✓ N/A _____

11. Is the software adaptable to different instructional strategies? Yes ✓ No _____ N/A _____

12. Is the software compatible with your classroom presentation? Yes ✓ No _____ N/A _____

13. Does the program contain a data management system (recordkeeping)?
Yes _____ No ✓ N/A _____

14. Is the software student-proof? Yes ✓ No _____ N/A _____

15. Does the program allow the student adequate time to complete learning segments? Yes ✓ No _____ N/A _____

16. Is the program designed to alert the teacher to a student who is experiencing difficulty with the content? Yes _____
No _____ N/A ✓

17. Is the content relevant to the instructional needs of the student?
Yes ✓ No _____ N/A _____

18. Does the program work as publisher claims? Yes _____
No _____ N/A _____

EVALUATOR'S RECOMMENDATIONS:

ADDITIONAL COMMENTS:

This is an excellent program that will be very beneficial for our 6th students.

EVALUATION SUMMARY

Please circle appropriate number with 5 being highest					
Performance	1	2	3	4	(5)
Ease of Use	1	2	3	4	(5)
Error Handling	1	2	3	4	(5)
Appropriateness	1	2	3	4	(5)
Documentation	1	2	3	4	5
Educational Value	1	2	3	4	(5)

SOFTWARE EVALUATION

1. Title, Publisher, Copyright Date:

2. Type

Tutorial	XX	Drill and Practice	
Game		Simulation	XX
Combination		Test/Diagnosis	
Administrative		Other	

3. User

Pre School		Elementary	
Jr. High		Sr. High	
College		Adult	XX

Comments:

---

4. Cost

1. Initial cost of the program

2. Replacement policy (yes) _____ (no) _____

   Cost for replacement

3. Hardware requirements:

   IBM PS/30

   32K _____ 48K _____ 64K XX

   Single drive XX Double drive _____

   Printer (yes) _____ (no) XX

   Color (yes optional (no) _____

   Special Hardware Required:
   (yes) _____ (no) XX

COMMENTS:

5. Does the program reach the target population for which it was designed? Yes ✓ No _____ N/A _____

6. Are the instructions well organized, useful and easy to understand? Yes ✓ No _____ N/A _____

7. Does the material require extensive preparation or training on the user's part? Yes _____ No ✓ N/A _____

8. Does the program provide for user self-pacing? Yes ✓ No _____ N/A _____

9. Is the content presented clearly? Yes ✓ No _____ N/A _____

10. Is the program organized and presented in a sequential manner and in appropriate developmental steps? Yes ✓ No _____ N/A _____

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16. Does the speed of presentation match individual learning styles? Yes ✓ No _____ N/A _____

17. Is the size of the print clear and well spaced? Yes ✓ No _____ N/A _____

18. Are the use of graphics, sound, and color appropriate? Yes ✓ No _____ N/A _____

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1. Does the material require the purchase of accompanying printed material? Yes _____ No ✓ N/A _____

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12. Is the software compatible with your classroom presentation? Yes ✓ No _____ N/A _____

13. Does the program contain a data management system (recordkeeping)?
Yes _____ No ✓ N/A _____

14. Is the software student-proof? Yes ✓ No _____ N/A _____

15. Does the program allow the student adequate time to complete learning segments? Yes ✓ No _____ N/A _____

16. Is the program designed to alert the teacher to a student who is experiencing difficulty with the content? Yes _____
No ✓ N/A _____

17. Is the content relevant to the instructional needs of the student?
Yes ✓ No _____ N/A _____

18. Does the program work as publisher claims? Yes ✓
No _____ N/A _____

EVALUATOR'S RECOMMENDATIONS:

ADDITIONAL COMMENTS:

EVALUATION SUMMARY

Please circle appropriate number with 5 being highest					
Performance	1	2	3	4	(5)
Ease of Use	1	2	3	4	(5)
Error Handling	1	2	3	4	(5)
Appropriateness	1	2	3	4	(5)
Documentation	1	2	(3)	4	5
Educational Value	1	2	3	(4)	5

APPENDIX G

TEST TAKING TIPS
SOFTWARE EVALUATION
AND RECOMMENDATIONS

1. Are the instructions well organized, useful, and easy to understand? yes ✓ no ____

2. Does the material require extensive preparation or training on the user's part? yes ____ no ✓

3. Is the content presented clearly? yes ✓ no ____

4. Is the program organized and presented in a sequential manner and in appropriate developmental steps? yes ✓ no ____

5. Can the user exit the program at any time? yes ____ no ✓

6. Does the user need typing skills to use the program? yes ____ no ✓

7. Can a student use the program without supervision? yes ✓ no ____

Pretty much but not completely

8. Is the screen presentation pleasing to the eye? yes ✓ no ____

9. Does the speed of presentation match individual learning styles? yes ✓ no ____

10. Is the size of the print clear and well spaced? yes ✓ no ____

11. Are the use of graphics, sound, and color appropriate? yes ✓ no ____

12. Is the program simple to use? yes ✓ no ____

13. Is the program content accurate? yes ✓ no ____

14. Are the program commands consistent? yes ✓ no ____

15. Does the material provide a variety of built-in reinforcements? yes____ no____

16. Is the material presented on a meaningful and appropriate language level? yes✓ no____

17. Is the program free of sex bias and stereotyping? yes✓ no____

18. Does the program provide the user the opportunity for review? yes✓ no____

19. Is the software student-proof? yes____ no____

20. Does the program allow the student adequate time to complete learning segments? yes✓ no____

21. Is the content relevant to the instructional needs of the student? yes✓ no____

Evaluator's Recommendations: _____

_____

_____

Additional Comments: _____

_____

_____

Software Evaluation Summary

Please circle appropriate number with 5 being best.

Performance	1 2 3 4 5
Ease of Use	1 2 3 4 5
Error Handling	1 2 3 4 5
Appropriateness	1 2 3 4 5
Documentation	1 2 3 4 5
Educational Value	1 2 3 4 5

TEST TAKING TIPS
SOFTWARE EVALUATION
AND RECOMMENDATIONS

1. Are the instructions well organized, useful, and easy to understand? yes ✓ no ____

2. Does the material require extensive preparation or training on the user's part? yes ____ no ✓

3. Is the content presented clearly?
yes ____ no ____

4. Is the program organized and presented in a sequential manner and in appropriate developmental steps? yes ✓ no ____

5. Can the user exit the program at any time?
yes ✓ no ____

6. Does the user need typing skills to use the program? yes ____ no ✓

7. Can a student use the program without supervision?
yes ____ no ____ Lois needed help

8. Is the screen presentation pleasing to the eye?
yes ✓ no ____

9. Does the speed of presentation match individual learning styles? yes ✓ no ____

10. Is the size of the print clear and well spaced?
yes ✓ no ____

11. Are the use of graphics, sound, and color appropriate? yes ____ no Question # 4 Lines segments for the angle should be more accurate

12. Is the program simple to use? yes ✓ no ____

13. Is the program content accurate?
yes ✓ no ____

14. Are the program commands consistent?
yes ✓ no ____

15. Does the material provide a variety of built-in reinforcements? yes ✓ no ____

16. Is the material presented on a meaningful and appropriate language level? yes ✓ no ____

17. Is the program free of sex bias and stereotyping? yes ✓ no ____

18. Does the program provide the user the opportunity for review? yes ✓ no ____

19. Is the software student-proof? yes ____ no ____

20. Does the program allow the student adequate time to complete learning segments? yes ✓ no ____

21. Is the content relevant to the instructional needs of the student? yes ✓ no ____

Evaluator's Recommendations: Except for the one diagram in question # 4 it's very well done.

Additional Comments: The student, Lois, scored 44 on the pre-test. She needs more study and this program showed that

Software Evaluation Summary

Please circle appropriate number with 5 being best.

Performance	1 2 3 4 (5)
Ease of Use	1 2 3 (4) 5
Error Handling	1 2 3 4 (5)
Appropriateness	1 2 3 4 (5)
Documentation	1 2 3 4 (5)
Educational Value	1 2 3 4 (5)

TEST TAKING TIPS
SOFTWARE EVALUATION
AND RECOMMENDATIONS

1. Are the instructions well organized, useful, and easy to understand? yes ✓ no ____

2. Does the material require extensive preparation or training on the user's part? yes ____ no ✓

3. Is the content presented clearly? yes ✓ no ____

4. Is the program organized and presented in a sequential manner and in appropriate developmental steps? yes ✓ no ____

5. Can the user exit the program at any time? yes ✓ no ____

6. Does the user need typing skills to use the program? yes ____ no ✓

7. Can a student use the program without supervision? yes ✓ no ____

8. Is the screen presentation pleasing to the eye? yes ✓ no ____

9. Does the speed of presentation match individual learning styles? yes ✓ no ____

10. Is the size of the print clear and well spaced? yes ✓ no ____

11. Are the use of graphics, sound, and color appropriate? yes ✓ no ____

12. Is the program simple to use? yes ✓ no ____

13. Is the program content accurate? yes ✓ no ____

14. Are the program commands consistent? yes ✓ no ____

15. Does the material provide a variety of built-in reinforcements? yes ✓ no____

16. Is the material presented on a meaningful and appropriate language level? yes ✓ no____

17. Is the program free of sex bias and stereotyping? yes ✓ no____

18. Does the program provide the user the opportunity for review? yes ✓ no____

19. Is the software student-proof? yes ✓ no____

20. Does the program allow the student adequate time to complete learning segments? yes ✓ no____

21. Is the content relevant to the instructional needs of the student? yes ✓ no____

Evaluator's Recommendations: _____

_____

_____

Additional Comments: Very good program

_____

_____

Software Evaluation Summary

Please circle appropriate number with 5 being best.

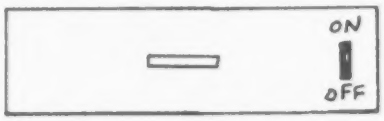
Performance	1 2 3 4 (5)
Ease of Use	1 2 3 4 (5)
Error Handling	1 2 3 4 (5)
Appropriateness	1 2 3 4 (5)
Documentation	1 2 3 4 (5)
Educational Value	1 2 3 4 (5)

APPENDIX H

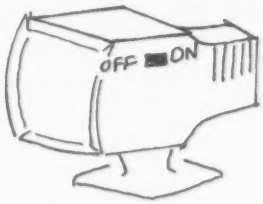
INSTRUCTIONS FOR USING COMPUTER PROGRAM

Type or press only what is underlined in orange.

1. Turn CPU ON.



2. Turn monitor ON.



3. Wait ... (You DO NOT have to enter new date or time below)

In a few seconds, the screen will show:

Current date is Wed. 3-08-1989
Enter new date (mm-dd-yy): Just press ENTER
Enter new time: Just press ENTER

4. Wait ...

Screen will show: C>

C> type CD\TTT press ENTER (the backslash key is above the ENTER key)
C> type BASICA press ENTER

6. Screen will show: OK

OK
press the F3 key (the F3 key is along the top of the keyboard - left side)
OK
type TTT press ENTER

OK
press the F2 key (F2 is next to the F3 key)

INSTRUCTIONS FOR USING COMPUTER PROGRAM
(continued)

To Turn Computer Off When Student Is Finished:

1. OK

   type SYSTEM press ENTER
   C> type CD\ press ENTER
   C>

2. Turn CPU off.

3. Turn monitor off.

   Be sure NOT to turn computer off unless C> is displayed.

- -

To Exit Program Before The End:

1. Hold the CONTROL key down while you press then release the PAUSE key.

2. OK
   type SYSTEM press ENTER
   C> type CD\ press ENTER
   C>

3. Turn CPU off.

4. Turn monitor off.

APPENDIX I

QUESTION #1 DISTANCE/RATE/TIME

Sarah rode on a 154 mile bicycle trip. She averaged 22 miles per hour. How long did the trip take?

a. 5 hours
b. 5 hours 38 minutes
(c) 7 hours
d. 7 hours 7 minutes
e. not enough information

type a, b, c, d, or e and press ENTER

? -

QUESTION #2 EXPONENTS

Which of the following are correct?

$10^5 = 100000$ $9^2 = 81$ $2^5 = 32$

a. Only $10^5 = 100000$
b. Only $9^2 = 81$
c. Only $2^5 = 32$
d. $10^5 = 100000$ and $9^2 = 81$
(e) All are correct

type a, b, c, d, or e and press ENTER

? -

QUESTION #3 PROPORTION

Two out of every 7 people who are eligible to vote have registered.

In Putneyville, there are 7,200 people eligible to vote.

Approximately how many people are registered?

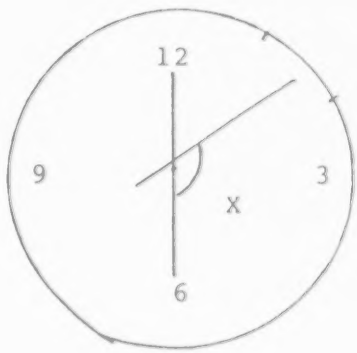
a. 1027
(b) 2057
c. 257
d. 2520
e. 514

type a, b, c, d, or e and press ENTER

? -

QUESTION #4 DEGREES

How many degrees are in angle X?



a. 96
b. 22
c. 144
(d) 132
e. not enough information

ype a, b, c, d, or e and press ENTER

-

QUESTION #5 SQUARE ROOT

The square root of 53 is between which two numbers?

a. 8 and 9
(b) 7 and 8
c. 6 and 7
d. 5 and 6
e. 1/4 and 1/2

type a, b, c, d, or e and press ENTER

? -

QUESTION #6 PERIMETER

How would you figure the number of feet of fence needed to fence part of a back yard 11 feet long and 14 feet wide?

a. 2(11) + 2(14)
b. 2(11) x 2(14)
c. 14 x 11 + 14 x 11
d. 14 x 11
e. 14 + 11

type a, b, c, d, or e and press ENTER

? -

QUESTION #7 AREA

The Akins want to fertilize their front yard. The yard is 100 feet across the front and 40 feet from the street to the house. How would the Akins figure the square feet of the yard in order to know how much fertilizer to buy.

a. 100 + 100 + 40 + 40
b. 40 x 100 + 40 x 100
c. 2(40 + 100)
d. 40 x 100
e. 40 + 100

type a, b, c, d, or e and press ENTER

? -

QUESTION #8 PYTHAGOREAN THEOREM

Atlas Lumber Supply makes daily deliveries to a tri-city area. Each morning, the truck travels 15 miles northeast from Brasselton to Danville. The driver then heads 12 miles west to Highlands. How far must the driver travel south to return home to Brasselton?

a. 17 miles
b. 13 miles
c. 12 miles
d. 23 miles
e. 9 miles

type a, b, c, d, or e and press ENTER

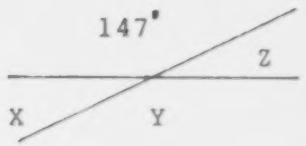
? -

STRAIGHT ANGLES

QUESTION #9 DEGREES IN ANGLES/VERTICAL ANGLES

How many degrees are there in angle X? angle Y? angle Z?

a. 147°
b. 113°
c. 45°
d. 33°
e. not enough information



type a, b, c, d, or e and press ENTER

angle X ? d
angle y ? a
angle z ? d

APPENDIX J

TEST SCORE COMPARISON

Comparison of Pretest and GED Test Mathematics Scores

Student number:	Pretest Score	GED Test Score
Students using the Test Taking Tips computer program:		
1	56	58
2	50	54
3	54	56
4	46	47
5	37	40
6	36	33
7	44	47
8	51	49
9	42	46
Students not using the Test Taking Tips computer program:		
1	74	74
2	43	43
3	51	55
4	51	52
5	50	47
6	46	47
7	45	47
8	74	61
9	48	54
10	59	54
11	44	47
12	53	40
13	74	61

APPENDIX K

Item Analysis of Student Survey Questions

Numbers before percentages indicate the number of students answering each question.

1. Is this the first time you have worked through "Test Taking Tips"?

7 - 77.8% yes 2 - 22.2% no

2. In using the program, did you learn any algebra or geometry you didn't know before?

6 - 66.7% yes 3 - 33.3% no

If yes, what? Exponents, Formulas, Geometry Pythagorean Theorem, Algebra, No answer

3. Was there any algebra or geometry you knew before, but using the program helped you to understand it better?

7 - 77.8% yes 2 - 22.2% no

If yes, what? Pythagorean Theorem, Square Root & Degrees, Straight/Vertical Angles, Perimeter & Area, Algebra, (2) No Answer

4. Do you think it would be worthwhile to go through the program again, or do you think going through it once is enough?

8 - 88.9% I would like to go through the program again.

1 - 11.1% I got all the information I needed the first time.

5. Do you think your chances of passing the GED Mathematics Test are better, the same, or worse since you used "Test Taking Tips"?

7 - 77.8% Yes, better. 2 - 22.2% About the same.

0 No, worse.

STUDENT SURVEY

Thank you for answering the following questions about the computer program "Test Taking Tips."

1. Is this the first time you have worked through "Test Taking Tips"?

✓ yes _____ no

2. In using the program, did you learn any algebra or geometry you didn't know before?

✓ yes _____ no

If yes, what? EXPONENTS

3. Was there any algebra or geometry you knew before, but using the program helped you to understand it better?

✓ yes _____ no

If yes, what? PYTHAGOREAN THEOREM

4. Do you think it would be worthwhile to go through the program again, or do you think going through it once is enough?

✓ I would like to go through the program again.

_____ I got all the information I needed the first time.

5. Do you think your chances of passing the GED Mathematics Test are better, the same, or worse since you used "Test Taking Tips"?

✓ Yes, better. _____ About the same.

_____ No, worse.

STUDENT SURVEY

Thank you for answering the following questions about the computer program "Test Taking Tips."

1. Is this the first time you have worked through "Test Taking Tips"?

X yes _____ no

2. In using the program, did you learn any algebra or geometry you didn't know before?

X yes _____ no

If yes, what? geom

3. Was there any algebra or geometry you knew before, but using the program helped you to understand it better?

X yes _____ no

If yes, what? perimeter & area

4. Do you think it would be worthwhile to go through the program again, or do you think going through it once is enough?

no I would like to go through the program again.

yes I got all the information I needed the first time.

5. Do you think your chances of passing the GED Mathematics Test are better, the same, or worse since you used "Test Taking Tips"?

X Yes, better. _____ About the same.

_____ No, worse.

STUDENT SURVEY

Thank you, for answering the following questions about the computer program "Test Taking Tips."

1. Is this the first time you have worked through "Test Taking Tips"?

_____yes ___X___no

2. In using the program, did you learn any algebra or geometry you didn't know before?

___X___yes _____no

If yes, what? ___algebra___

3. Was there any algebra or geometry you knew before, but using the program helped you to understand it better?

___✓___yes _____no

If yes, what? ___algebra___

4. Do you think it would be worthwhile to go through the program again, or do you think going through it once is enough?

___✓___I would like to go through the program again.

_____I got all the information I needed the first time.

5. Do you think your chances of passing the GED Mathematics Test are better, the same, or worse since you used "Test Taking Tips"?

_____Yes, better. ___✓___About the same.

_____No, worse.

STUDENT SURVEY

Thank you for answering the following questions about the computer program "Test Taking Tips."

1. Is this the first time you have worked through "Test Taking Tips"?

✓ yes _____ no

2. In using the program, did you learn any algebra or geometry you didn't know before?

✓ yes _____ no

If yes, what? Pythagorean Theroy

3. Was there any algebra or geometry you knew before, but using the program helped you to understand it better?

✓ yes _____ no

If yes, what? Square root + Degrees

4. Do you think it would be worthwhile to go through the program again, or do you think going through it once is enough?

✓ I would like to go through the program again.

_____ I got all the information I needed the first time.

5. Do you think your chances of passing the GED Mathematics Test are better, the same, or worse since you used "Test Taking Tips"?

✓ Yes, better. _____ About the same.

_____ No, worse.

STUDENT SURVEY

Thank you for answering the following questions about the computer program "Test Taking Tips."

1. Is this the first time you have worked through "Test Taking Tips"?

__/__ yes _____ no

2. In using the program, did you learn any algebra or geometry you didn't know before?

__X__ yes _____ no

If yes, what? _____

3. Was there any algebra or geometry you knew before, but using the program helped you to understand it better?

__X__ yes _____ no

If yes, what? _____

4. Do you think it would be worthwhile to go through the program again, or do you think going through it once is enough?

__X__ I would like to go through the program again.

_____ I got all the information I needed the first time.

5. Do you think your chances of passing the GED Mathematics Test are better, the same, or worse since you used "Test Taking Tips"?

_____ Yes, better. __X__ About the same.

_____ No, worse.

STUDENT SURVEY

Thank you for answering the following questions about the computer program "Test Taking Tips."

1. Is this the first time you have worked through "Test Taking Tips"?

_____yes _X_no

2. In using the program, did you learn any algebra or geometry you didn't know before?

_____yes _X_no

If yes, what? _____

3. Was there any algebra or geometry you knew before, but using the program helped you to understand it better?

_X_yes _____no

If yes, what? Straight Vertical Angles

4. Do you think it would be worthwhile to go through the program again, or do you think going through it once is enough?

_X_I would like to go through the program again.

_____I got all the information I needed the first time.

5. Do you think your chances of passing the GED Mathematics Test are better, the same, or worse since you used "Test Taking Tips"?

_X_Yes, better. _____About the same.

_____No, worse.

STUDENT SURVEY

Thank you for answering the following questions about the computer program "Test Taking Tips."

1. Is this the first time you have worked through "Test Taking Tips"?

✓ yes _____ no

2. In using the program, did you learn any algebra or geometry you didn't know before?

_____ yes ✓ no

If yes, what? _____

3. Was there any algebra or geometry you knew before, but using the program helped you to understand it better?

✓ yes _____ no

If yes, what? _____

4. Do you think it would be worthwhile to go through the program again, or do you think going through it once is enough?

✓ I would like to go through the program again.

_____ I got all the information I needed the first time.

5. Do you think your chances of passing the GED Mathematics Test are better, the same, or worse since you used "Test Taking Tips"?

✓ Yes, better. _____ About the same.

_____ No, worse.

STUDENT SURVEY

Thank you for answering the following questions about the computer program "Test Taking Tips."

1. Is this the first time you have worked through "Test Taking Tips"?

__✓__yes _____no

2. In using the program, did you learn any algebra or geometry you didn't know before?

__✓__yes _____no

If yes, what? formulas for solving different problems

3. Was there any algebra or geometry you knew before, but using the program helped you to understand it better?

_____yes __✓__no

If yes, what? _____

4. Do you think it would be worthwhile to go through the program again, or do you think going through it once is enough?

__✓__I would like to go through the program again.

_____I got all the information I needed the first time.

5. Do you think your chances of passing the GED Mathematics Test are better, the same, or worse since you used "Test Taking Tips"?

__✓__Yes, better. _____About the same.

_____No, worse.

STUDENT SURVEY

Thank you for answering the following questions about the computer program "Test Taking Tips."

1. Is this the first time you have worked through "Test Taking Tips"?

__✓__yes _____no

2. In using the program, did you learn any algebra or geometry you didn't know before?

_____yes __✓__no

If yes, what? _____

3. Was there any algebra or geometry you knew before, but using the program helped you to understand it better?

_____yes __✓__no

If yes, what? _____

4. Do you think it would be worthwhile to go through the program again, or do you think going through it once is enough?

__✓__I would like to go through the program again.

_____I got all the information I needed the first time.

5. Do you think your chances of passing the GED Mathematics Test are better, the same, or worse since you used "Test Taking Tips"?

__✓__Yes, better. _____About the same.

_____No, worse.

THe only ProBlem w,TH THe computer is. THaT I don't under sTand ,Ts FuncTiOns, so THaT wHen I KnewIgnc THe wrong answer I couldn't cHange it

APPENDIX L

INSTRUCTOR OBSERVATIONS

Please record any comments, observation, or actions that would indicate that a student has obtained an improved self-concept about his/her math ability, less test or math anxiety, better ability to pass the GED Mathematics Test, or any general improvement in math skills because of what was learned by working through the Test Taking Tips computer program.

After going through the Test Taking Tips on the computer, one student rushed back to class to work in the algebra and geometry sections of the GED Math book. By working through the Tips computer program, the student's knowledge of how to evaluate and solve algebra + geometry problems had improved. The student felt that her chances of passing the actual GED Test had greatly improved also.

One student who had not taken geometry in high school said that by going through the computer program a couple of times had more confidence in her ability to pass the GED Test the first time

INSTRUCTOR OBSERVATIONS

Please record any comments, observation, or actions that would indicate that a student has obtained an improved self-concept about his/her math ability, less test or math anxiety, better ability to pass the GED Mathematics Test, or any general improvement in math skills because of what was learned by working through the Test Taking Tips computer program.

The Test Taking Tips computer program provides positive reinforcement for the math anxious student. Observations from students indicate they find the exercise valuable.

One student who completed the program realized quickly that she needed more study before GED Testing. As she put it, "The computer told me in a nice way I've got to review algebra and geometry again." Another student who isn't computer literate was delighted the program was simple to operate and no one knew but himself that he did not do well. He immediately asked for more study materials. A third student observed that the program helped clear up some algebra and geometry study problems. In other words, algebra and geometry were easier to understand.

This computer program can help students better prepare to take the GED math test.

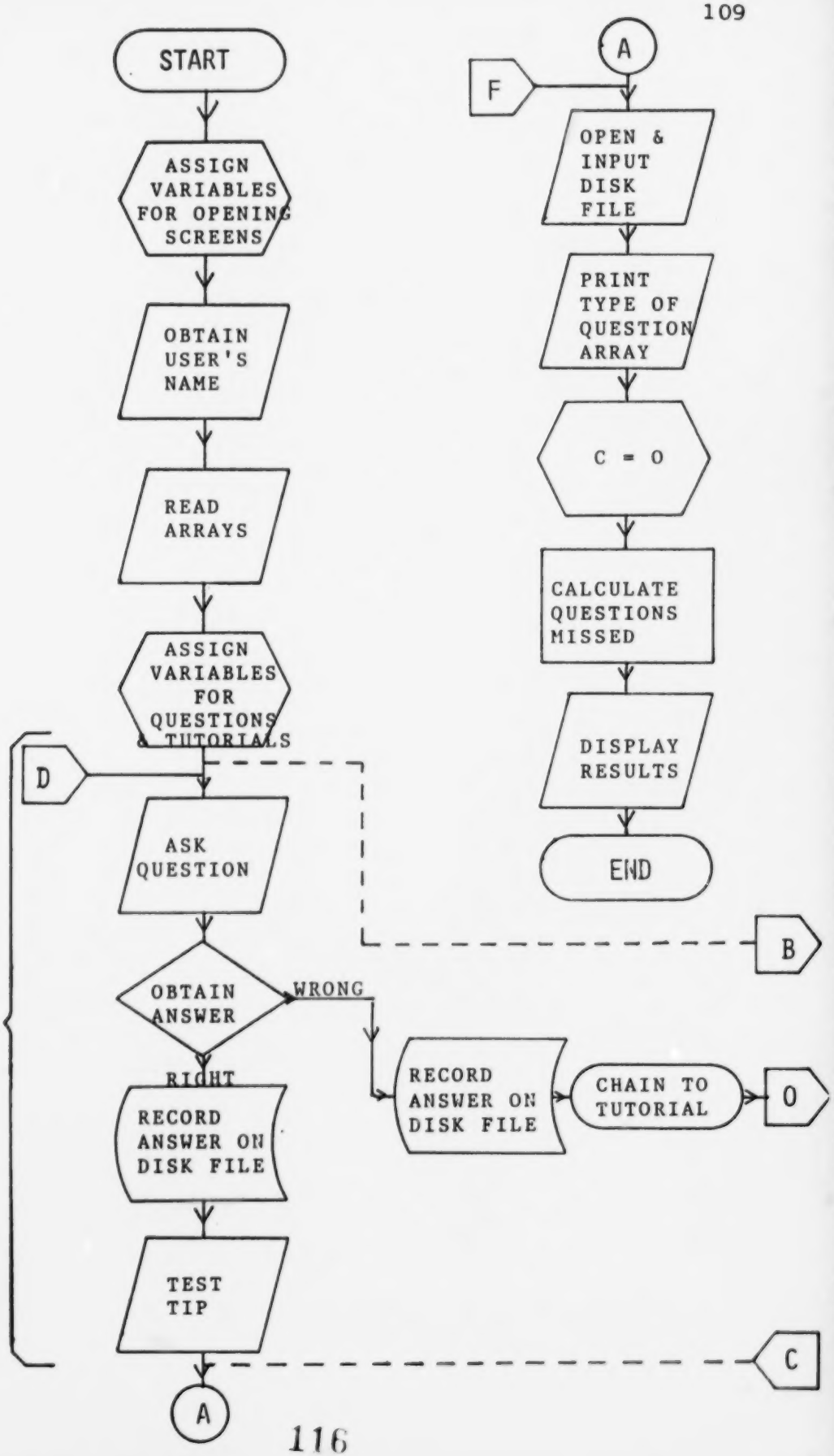
INSTRUCTOR OBSERVATIONS

Please record any comments, observation, or actions that would indicate that a student has obtained an improved self-concept about his/her math ability, less test or math anxiety, better ability to pass the GED Mathematics Test, or any general improvement in math skills because of what was learned by working through the Test Taking Tips computer program.

The student needs more study on Math and working through the program showed her weak areas to both of us. I was able to give her some supplements that would help her. She seemed to feel that the time was not wasted and ~~indicating~~ indicated that she would be willing to go through it a second time.

APPENDIX M

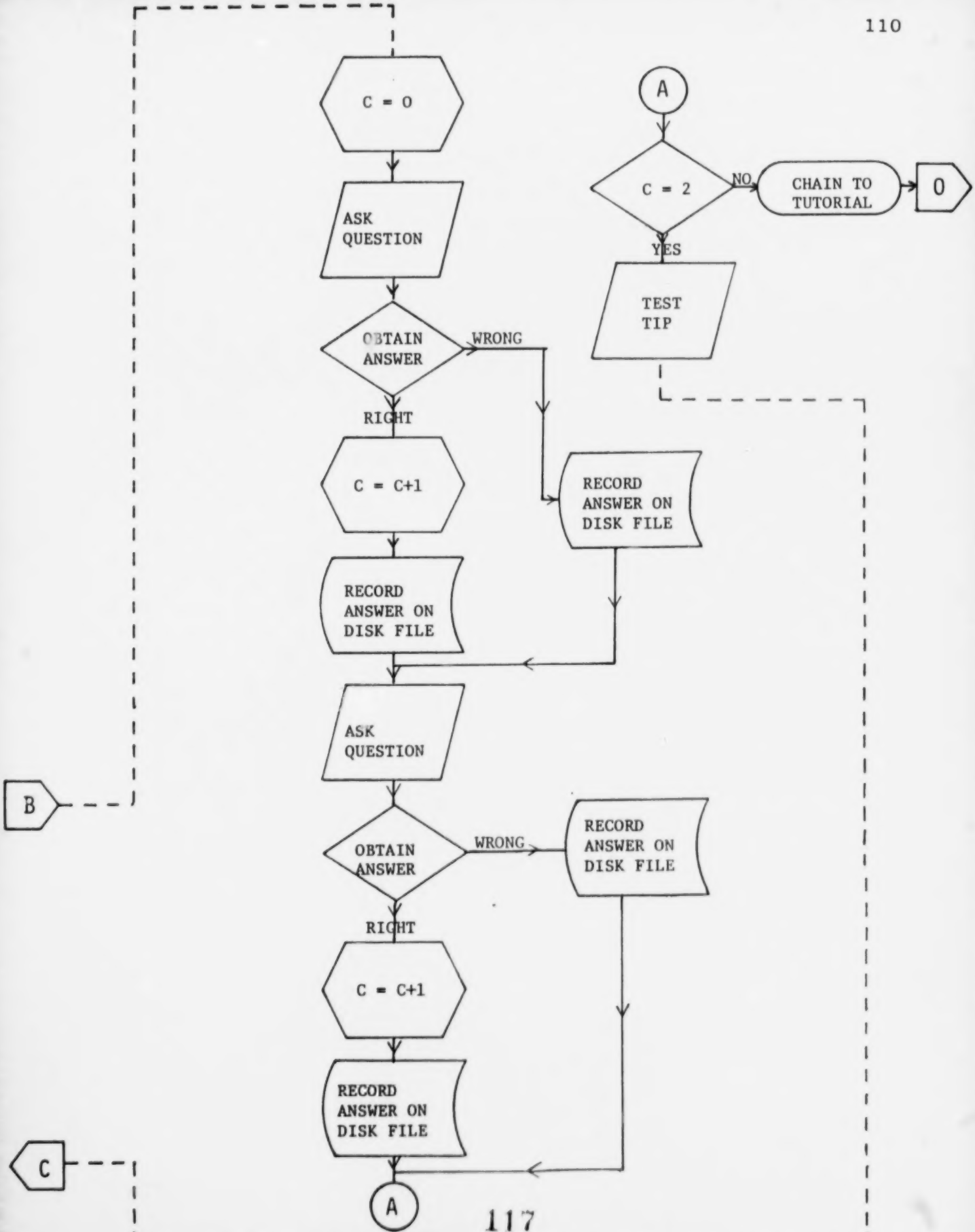
MAIN PROGRAM



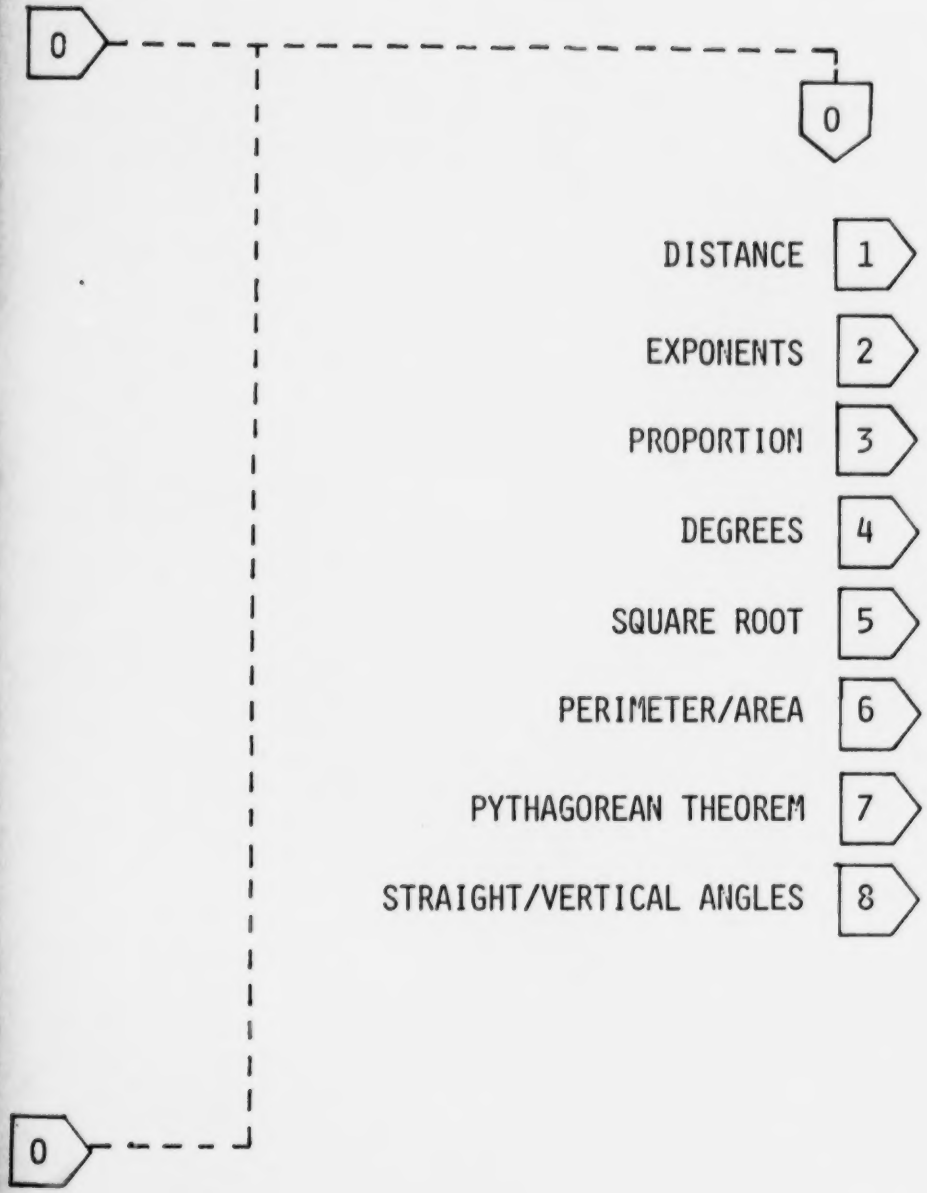
This section is repeated (not in a loop) for each of the following question topics:

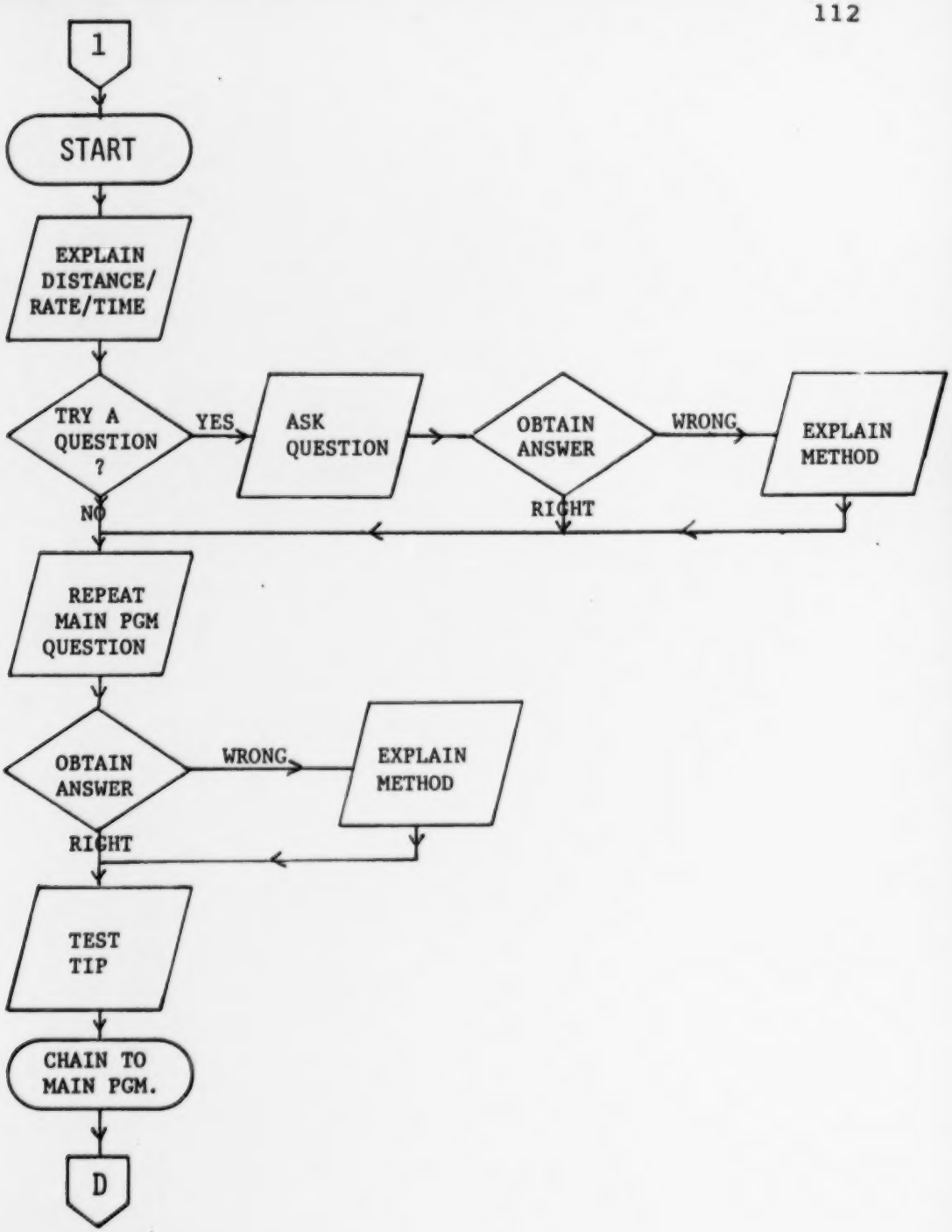
- Distance
- Exponents
- Proportion
- Degrees
- Square Root
- Pythagoreum Theorem
- Straight/Vertical Angles

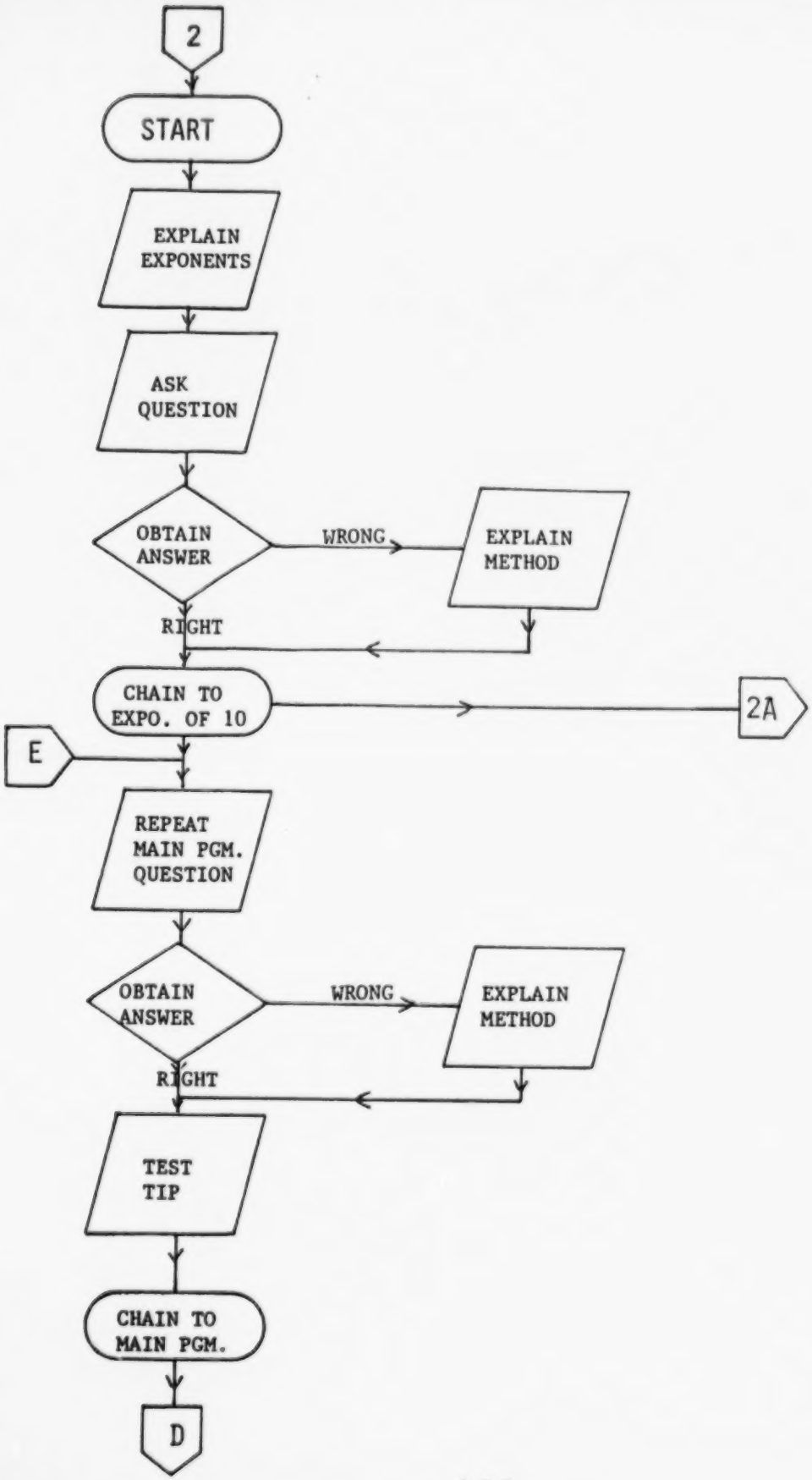
Broken lines explain the flow of perimeter and area questions

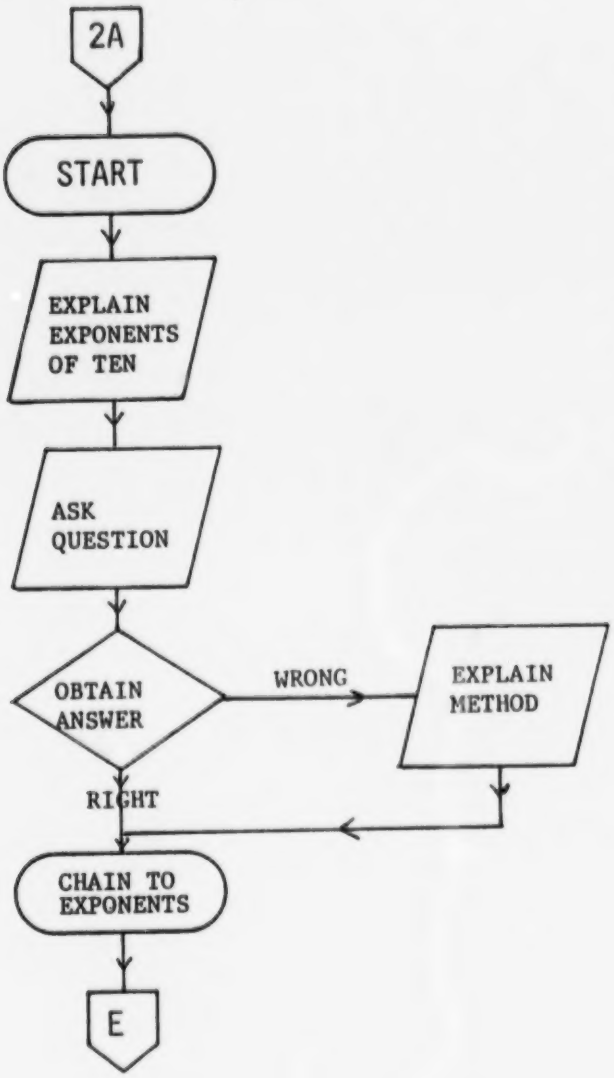

C = 0
ASK QUESTION
OBTAIN ANSWER
WRONG
RIGHT
C = C+1
RECORD ANSWER ON DISK FILE
RECORD ANSWER ON DISK FILE
ASK QUESTION
OBTAIN ANSWER
WRONG
RECORD ANSWER ON DISK FILE
RIGHT
C = C+1
RECORD ANSWER ON DISK FILE
A
B
C
A
C = 2
NO
CHAIN TO TUTORIAL
0
YES
TEST TIP

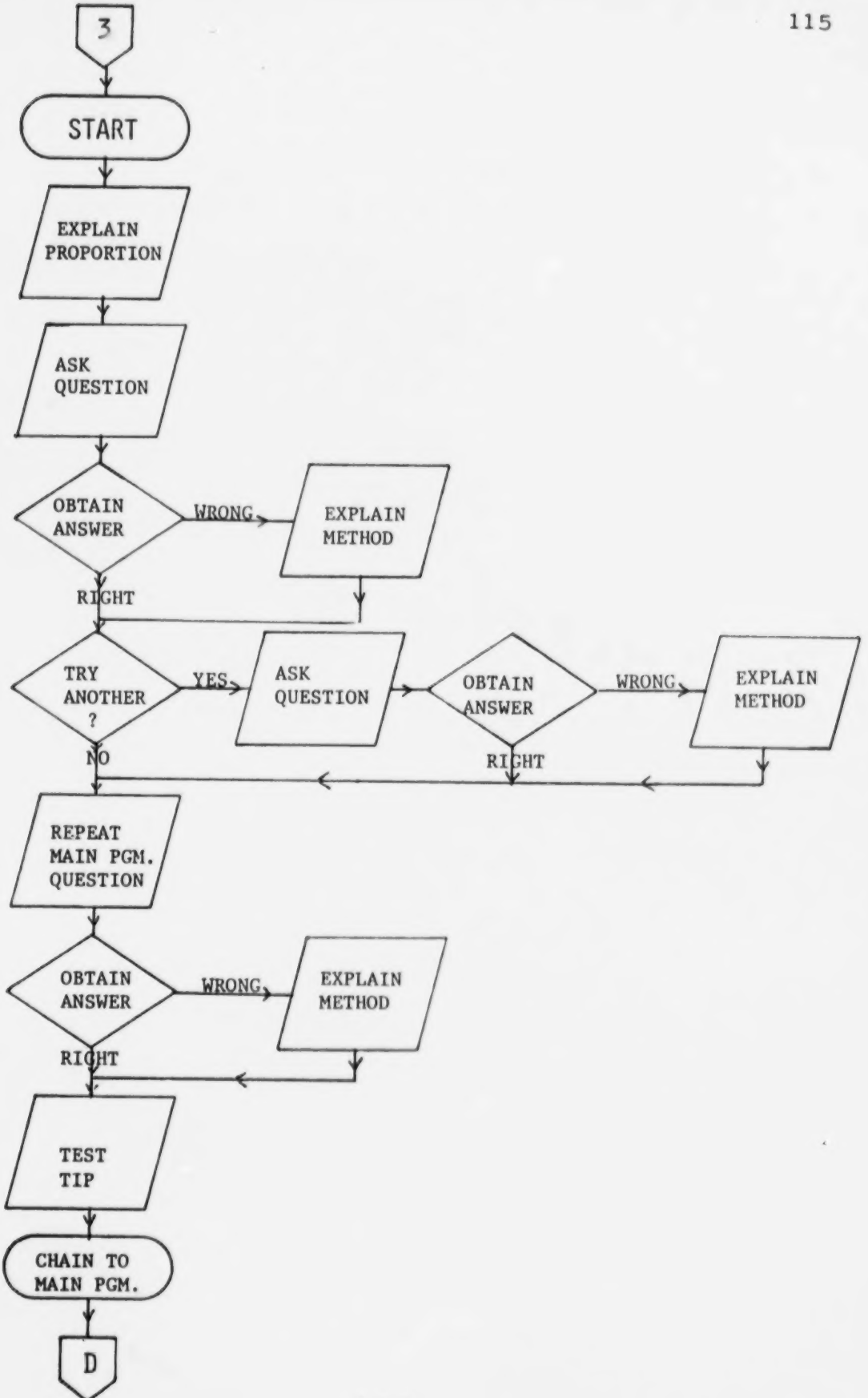
TUTORIAL PROGRAMS
OFFPAGE CONNECTOR KEY

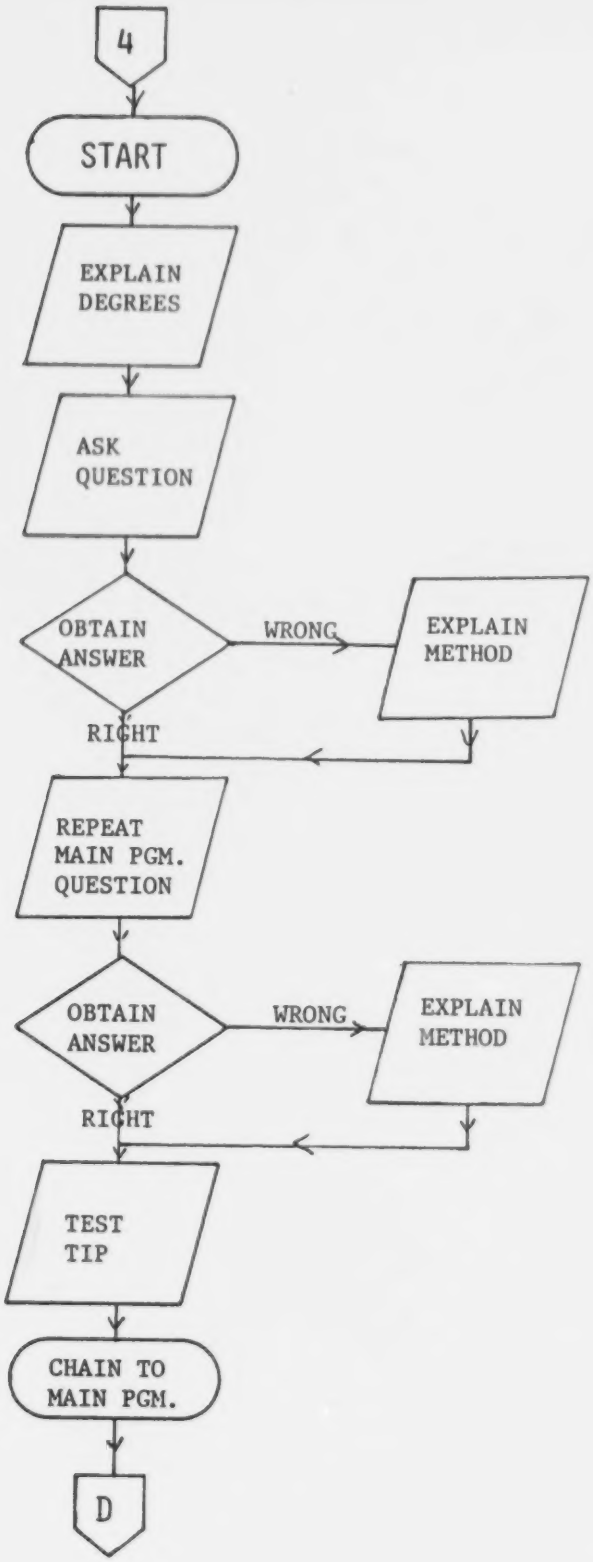


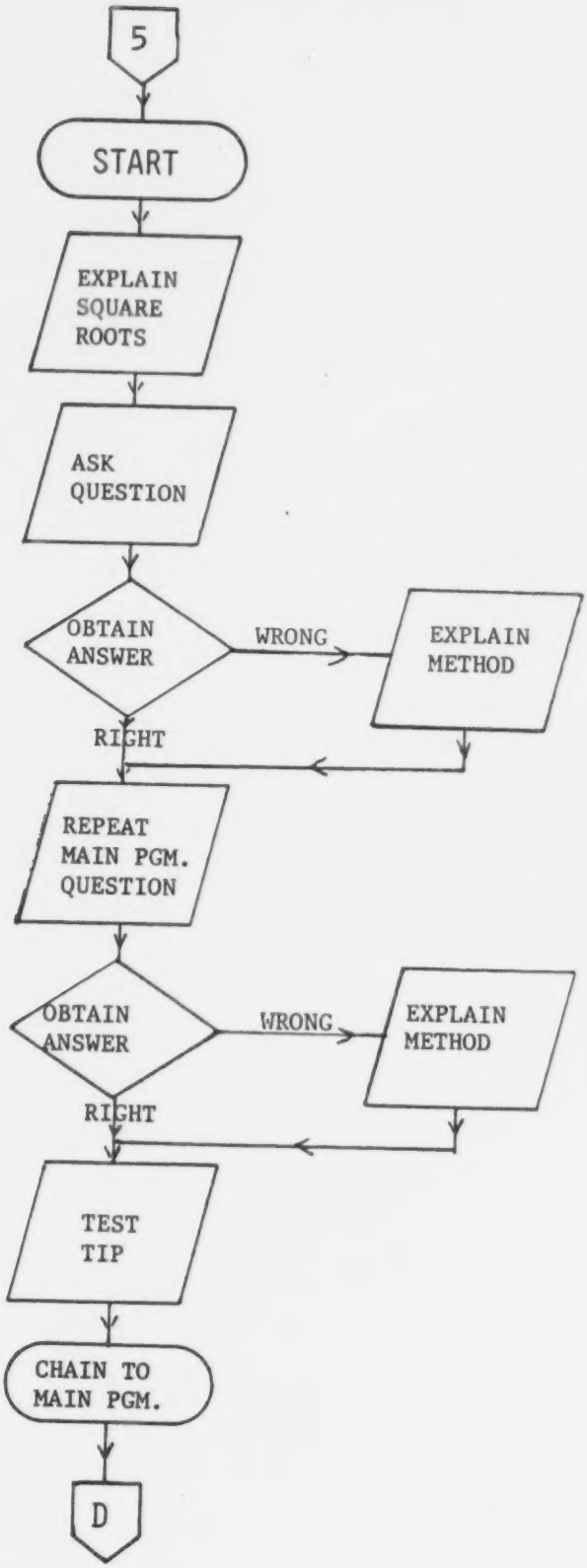

1
START
EXPLAIN DISTANCE/ RATE/TIME
TRY A QUESTION ?
YES
ASK QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
NO
RIGHT
REPEAT MAIN PGM QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
TEST TIP
CHAIN TO MAIN PGM.
D

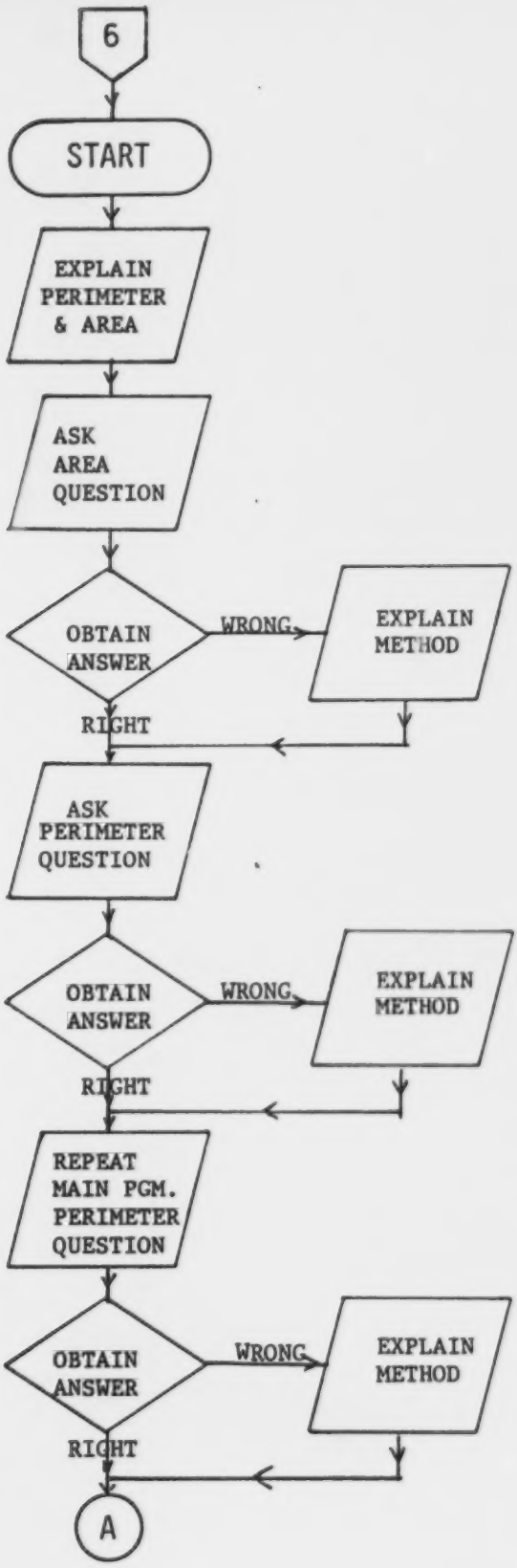

2
START
EXPLAIN EXPONENTS
ASK QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
CHAIN TO EXPO. OF 10
2A
E
REPEAT MAIN PGM. QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
TEST TIP
CHAIN TO MAIN PGM.
D

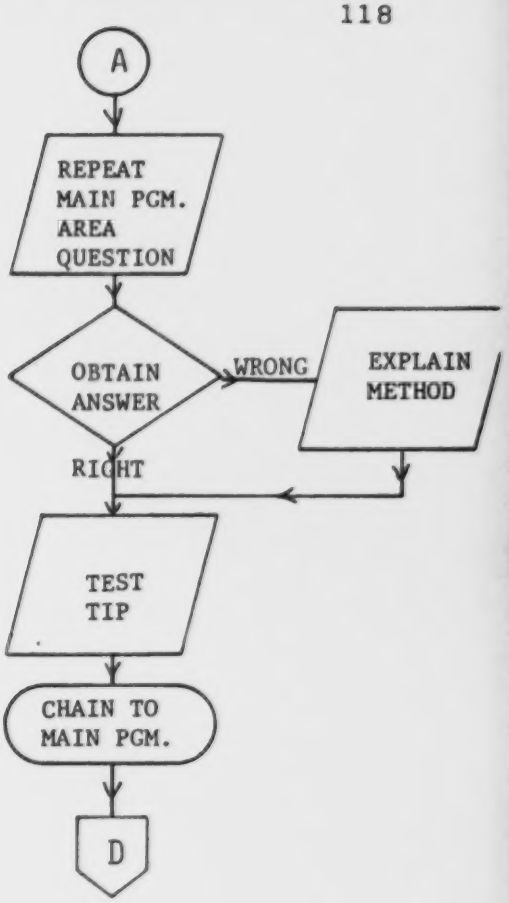

2A
START
EXPLAIN EXPONENTS OF TEN
ASK QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
CHAIN TO EXPONENTS
E

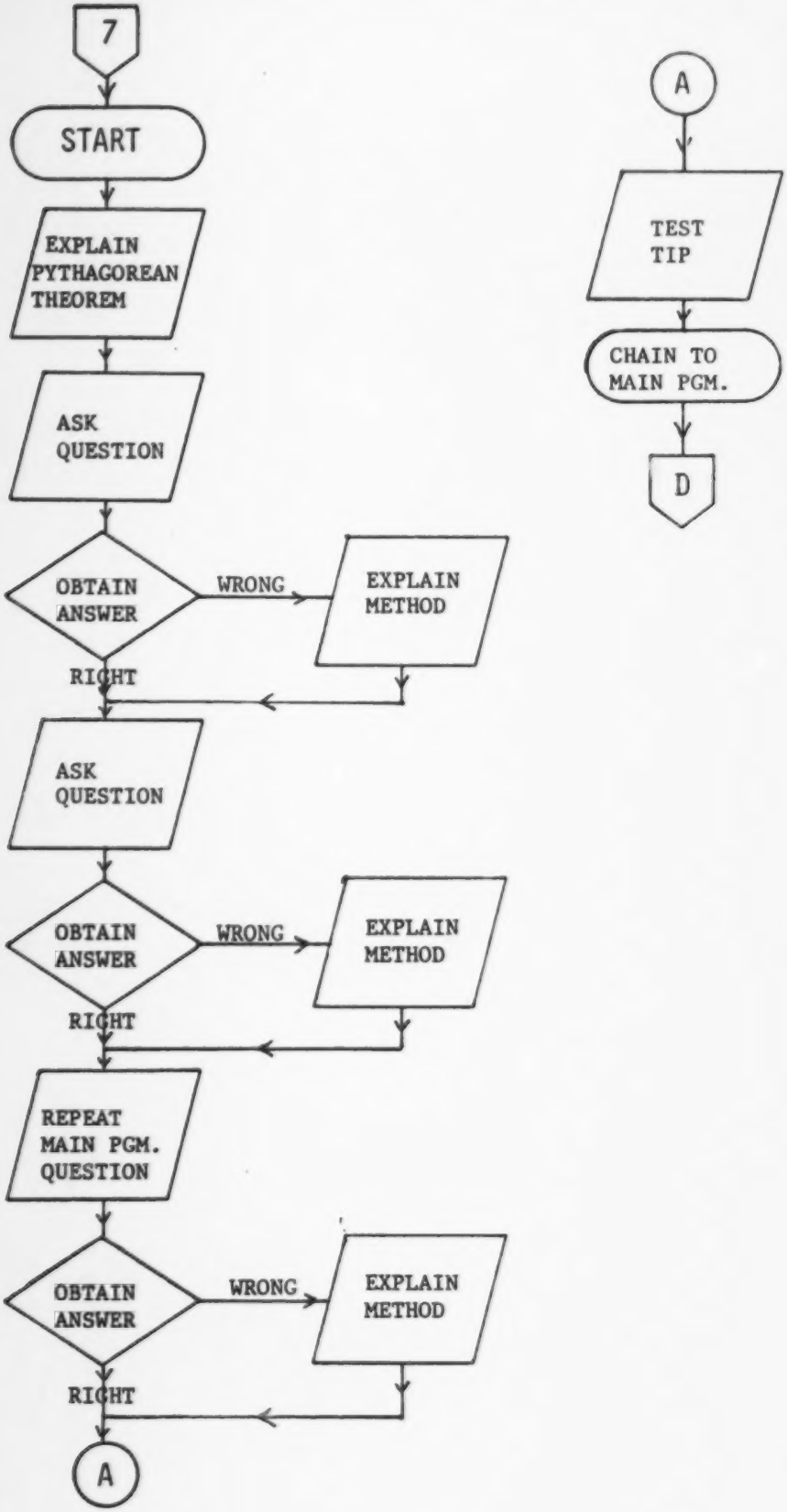

3
START
EXPLAIN PROPORTION
ASK QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
TRY ANOTHER ?
YES
ASK QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
NO
RIGHT
REPEAT MAIN PGM. QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
TEST TIP
CHAIN TO MAIN PGM.
D

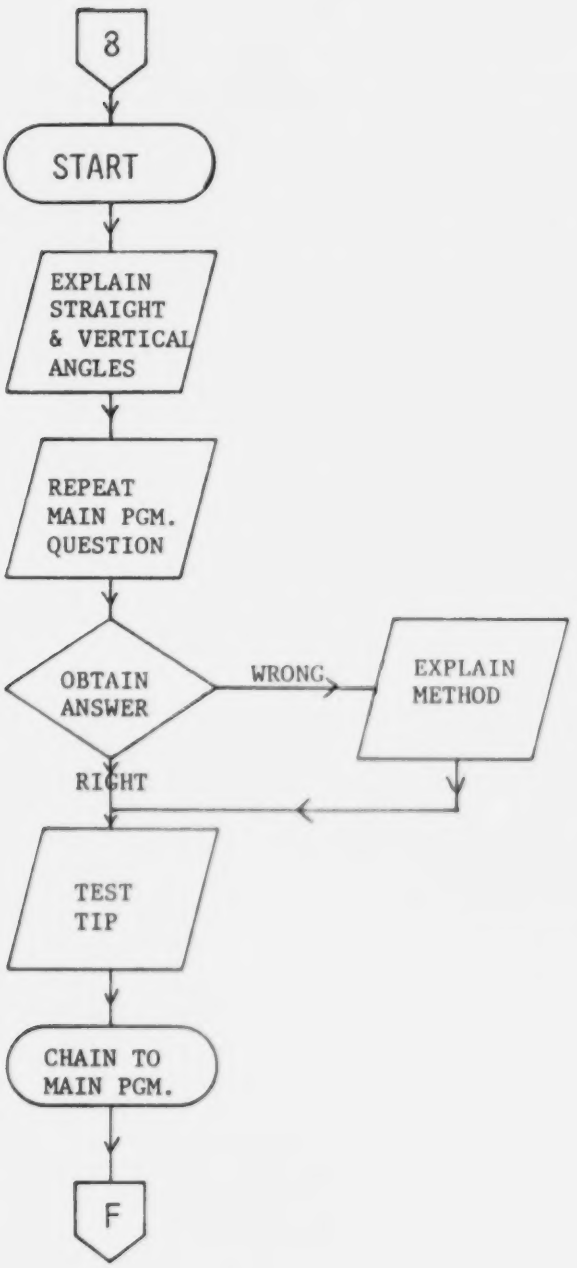

4
START
EXPLAIN DEGREES
ASK QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
REPEAT MAIN PGM. QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
TEST TIP
CHAIN TO MAIN PGM.
D


5
START
EXPLAIN SQUARE ROOTS
ASK QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
REPEAT MAIN PGM. QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
TEST TIP
CHAIN TO MAIN PGM.
D


6
START
EXPLAIN PERIMETER & AREA
ASK AREA QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
ASK PERIMETER QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
REPEAT MAIN PGM. PERIMETER QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
A


A
REPEAT MAIN PGM. AREA QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
TEST TIP
CHAIN TO MAIN PGM.
D


7
START
EXPLAIN PYTHAGOREAN THEOREM
ASK QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
ASK QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
REPEAT MAIN PGM. QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
A
A
TEST TIP
CHAIN TO MAIN PGM.
D


8
START
EXPLAIN STRAIGHT & VERTICAL ANGLES
REPEAT MAIN PGM. QUESTION
OBTAIN ANSWER
WRONG
EXPLAIN METHOD
RIGHT
TEST TIP
CHAIN TO MAIN PGM.
F